A HISTORY
OF THE NATIVE PEOPLE OF CANADA

VOLUME II (1,000 B.C. – A.D. 500)

by J. V. WRIGHT

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DEDICATED TO THE MEMORY OF THE ANCESTORS

OF THE NATIVE PEOPLE

PREFACE

This is the second volume in a three volume work intended to provide a broad readership with information on the human history of Canada prior to the appearance of the Europeans. As there were no literate societies in Canada at this time, the volumes are based upon archaeological information rather than the documentary sources generally expected in the writing of history. It is advocated here that there are two major branches of history that contribute to our understanding of past human activities: an archaeological history that predates written records and to which most of the vast span of human history pertains; and a documentary history based upon written records with a much shallower time depth even with regard to the earliest instances of writing in China, Egypt, and Mesopotamia. In the Western Hemisphere the earliest hieroglyphic writing only appeared sometime during the first millennium BC in Mesoamerica and was restricted to that region and Mexico up to the time of European contact. Such a recent date contrasts with the more than 12,000 years of known archaeological history. History based upon archaeological evidence is admittedly limited and is totally devoid of the human personalities that provide so much of the texture of history based upon written documents. It is a rich history, however, and the only one available for the majority of time our species' has lived upon this planet. And being a history based upon physical evidence it is less plagued than documentary history by psychological, emotional, religious, cultural, political, gender, personality, time, and situational biases. This is not to suggest that there are not archaeological biases, quite the contrary, but that the consequences of such bias tend to be more constrained by the requirements of the scientific method and a range of peer reviewed analytical procedures. Put another way, a French Jesuit writing about the Hurons in the early 17th century, albeit a very intelligent individual, was not subject to the scholarly procedures of modern documentary history. While archaeological history constitutes the bulk of human history it is a relatively recent discipline even when compared to documentary history. For a fuller understanding of past human events, it is obvious that both archaeological and documentary history must be relied upon. Most of the early documentary history of Canada, for example, cannot be properly evaluated divorced from the archaeological history. While archaeological history and documentary history study quite different materials and use markedly different methods to do so, archaeology having more in common with the disciplines of natural history, both approaches have a common goal - the greater understanding of past human behaviour.

The volumes are intended as reference sources for anyone who, for whatever reason, has a need to known some aspect of the pre-European human history of Canada.

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This could be a metallugist writing a history on the working of metals in Canada who can learn that native copper was being mined and worked into implements and ornaments 7,000 years ago or silver 5,000 years later. Or an art historian attempting to trace art styles across northern Eurasia into North America or outline the patterning of geometric motifs through time. One thing I have learned over the years is that it is impossible to predict what people will do with archaeological information. Such information, however, must first be made available and not locked-up in scholarly journals and books with limited distributions and, dare we say, a somewhat esoteric treatment of the subject matter.

Volume I examined the evidence of the first peopling of the Western Hemisphere and then focused on the time period from 10,000 to 1,000 BC. Volumes II and III consider the time periods of 1,000 BC to AD 500 and AD 500 to European contact, respectively. Each chapter in the volumes is dedicated to an identified culture that actually represents a composite of numerous independent societies who happened to share a relatively common cultural pattern. Each culture is then considered from the following perspectives: précis; cultural origins and descendants; technology; subsistence; settlement patterns; cosmology; external relationships; human biology; inferences on society; and limitations in the evidence. With such an organization it is hoped that an integrated view of past cultures can be achieved and, at the same time, provide the reader with readily apparent reference points.

Volume II represents a continuation of Volume I relative to pagination and illustration and table numbers. Thus the Volume begins with page 565, Map IV, Table 8, Colour Plate XV, Figure 57, etc. Certain qualifications relative to all three volumes, regarding such matters as the reasons for writing them in the first place, how radiocarbon years were translated into calendar years, theoretical orientation, and a host of other considerations were provided in the Preface and, in particular, the Introduction to Volume I (Wright 1995) and will not be repeated here. Suffice to say that the volumes represent descriptive outlines of the culture history of the native people of Canada as discernible by archaeological means. It is also an admittedly personal view of the archaeological history of Canada with all the limitations inherent in a single individual attempting to control an impossibly massive body of data. Such a synthesis, warts and all, however, is needed and hopefully it will help to stimulate future and better syntheses.

J.V. Wright,
Curator Emeritus,
Canadian Museum of Civilization,
Hull, Quebec August, 1998

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I must acknowledge my debt to the federal institution that has supported my research for over 30 years. Initially this was the National Museum of Canada, then the National Museum of Man, National Museums of Canada, and now the Canadian Museum of Civilization. In a career spanning nearly 50 years one is subjected to so many influences in such a pervasive manner that it is impossible, in many instances, to specifically identify those people who were ultimately responsible for my compulsion to provide a synthesis of the pre-European archaeological history of Canada. Certainly my mentor, Dr. J. Norman Emerson, had to be a significant factor with his insistence that archaeology should involve a broad public and that archaeologists have a social responsibility beyond that of their profession. Museum colleagues and archaeologists across Canada and abroad have provided much of the knowledge base and debating ground necessary for the formulation of a synthesis. Throughout the volumes I have used references as a substantive substitution for the totally impossible task of defending each and every conclusion in print. Archaeology is a data-driven discipline and as new data is generated every day any synthesis, by its very nature, will be premature. Personal inclinations regarding the nature of cultural processes and the utility of certain analytical procedures have undoubtedly coloured the volumes. Thus, the process is unavoidably personal. It has also been a gradual process (Wright: 1996). Some readers may feel that there is too much archaeological minutia and others that there is insufficient support for any particular interpretation. When one attempts to reach a large audience the requirements of individuals in that audience are of such a scope that not all will ever be fully satisfied. Hopefully the references will lead the interested readers into the details upon which certain conclusions have been based. I am a firm believer in the necessity to generate patterns and phenomena from bodies of data in order to use such patterns and phenomena to test theories. As has been appropriately noted,

> Phenomena are to be distinguished from data, the stuff of observation and experience. They are relatively abstract, but have a strongly visual character. They are constructed out of data, but not just any construction will do. Phenomena are natural kinds (or patterns) that we can picture. They show up in thought experiments and they play an indispensable role in scientific inference mediating between data and theory. (Brown 1994: 141)

I owe a particular debt of gratitude to my colleagues in the Archaeological Survey of Canada, Canadian Museum of Civilization for their many discussions, sound advise, and for providing much of the illustrative materials for these volumes. Constructive critical comment was provided by Dr. Ian Dyck on drafts of Chapters 23 and 26 and by Dr. Richard E. Morlan on Chapter 26. An early draft of Chapter 23 was also commented upon by the late Dr. William A. Ritchie, former State Archaeologist at the New York State Museum and Science Service, Albany and by Dr. Robert E. Funk, his successor and now retired State Archaeologist. Dr. Michael W. Spence of the Department of Anthropology, University of Western Ontario, London, also provided critical comment on Chapter 23. Appreciation is extended to Mr. David W. Laverie, former draftsman with the Canadian Museum of Civilization, for the line drawings of the maps, the chart, and the majority of the figures. It is always a pleasure and with a deep sense of appreciation to express my debt for the efficiency and kindness of the staff of the Library of the Canadian Museum of Civilization. And for all three volumes an expression of gratitude is owed to Mr. W. (Wally) B. Rice, a now retired research pharmacologist who, between 1960 and 1978, accompanied me into the field as a volunteer. His valuable assistance involved site excavations and survey that extended from Ontario, through northern Manitoba, Saskatchewan, and Alberta and into the Back, Thelon, and Dubawnt river drainages of Keewatin District, N.W.T. I would also like to thank Ms. Deborah Brownrigg, senior production officer with the Publication Division of the Canadian Museum of Civilization for her sage advise and many contributions that have seen the volumes through the processes of preparation and publication.

Permission to reproduce a number of the photographs and figures was granted by the following individuals and institutions: Patricia Allen, Archaeological Services, New Brunswick, for Black and White Plate XXII; Dr. Roy L. Carlson, Department of Archaeology, Simon Fraser University, for Figure 97; The Carnegie Museum of Natural History, Pittsburg, Pennsylvania for Figure 61; Dr. Norman Clermont, Université de Montréal, Departement de d'anthropologie, for the pipe drawing in Figure 67; Dr. Gary Coupland, Department of Anthropology, University of Toronto, for Figure 96; Dr. Jerome S. Cybulski, Archaeological Survey of Canada, Canadian Museum of Civilization, for the photographs in Black and White Plate XXXV; Dr. Knut R. Fladmark, Department of Archaeology, Simon Fraser University, for Colour Plate XVIII and Figure 94; the Geological Survey of Canada for Figure 58; Dr. Bryan C. Gordon, Archaeological Survey of Canada, Canadian Museum of Civilization, for Black and White Plates XXXVII, XXXVIII, and XXXIX; Dr. Brian Hayden, Department of Archaeology, Simon Fraser University, for Figures 91 and 93; Dr. Stephen Loring, National Museum of Natural History, Smithsonian Institution, for Figure 71; Dr. Robert McGhee, Archaeological Survey of Canada, Canadian Museum of Civilization, for Black and White Plate XXXXII and Figure 104; Gordon R. Peters, Superior National Forest Heritage Resource Program, Duluth, Minnesota, for the original floorplan of the Big Rice site in northern Minnesota (Figure 75); the Royal Ontario Museum, Toronto, for Black and White Plate XXVIII; Dr. David Sanger, Department of Anthropology, University of Maine at Orono, for Figure 88; and Phill Wright, Mount McGovern Co. Ltd., Oxford Mills, Ontario, for Black and White Plate XXIX.

It is a special pleasure to thank my family for their contributions to this endeavour. To my wife Dawn, for transferring my ancient WP 5.1 files into the Adobe Page Maker desktop publishing procedure to produce a camera-ready copy ofVolume II, and for the scanning, layout, adjustments and modifications of the photographs and illustrations in Adobe Photoshop.The foregoing sounds trite, relative to the endless battles with perverse and whimsical softwares and the never ending checking to ascertain that text had not cascaded or compromised the integrity of the illustrative material. With reference to the electronic production of a finished manuscript I used to refer to my wife as my mechanic; now I refer to her as my expeditor. Without her computer skills, dedication and exceptional perseverance the presentation of this volume would be considerably less than it is. My daughter Joyce provided much needed editorial assistance for parts ofVolume II.As the volumes have not been professionally edited, however, the reader's indulgence is requested relative to grammatical and typographical errors that invariably seem to be able to avoid detection. An index has not been provided as Volume II will be reproduced on CD-ROM where the personal computer word-search function will fill the role of a traditional index. Other functions that will be provided on the CD-ROM are hypertext links that will take the reader to a specific section or topic in the Volume, search for a particular word or subject within a chapter, print individual pages or a number of pages, cut and paste material, including text and graphics, from the electronic files for purposes of quotations or cross-references. The Colour Plates in the hard copy will appear as Black and White but will be full colour in the CD-ROM version.

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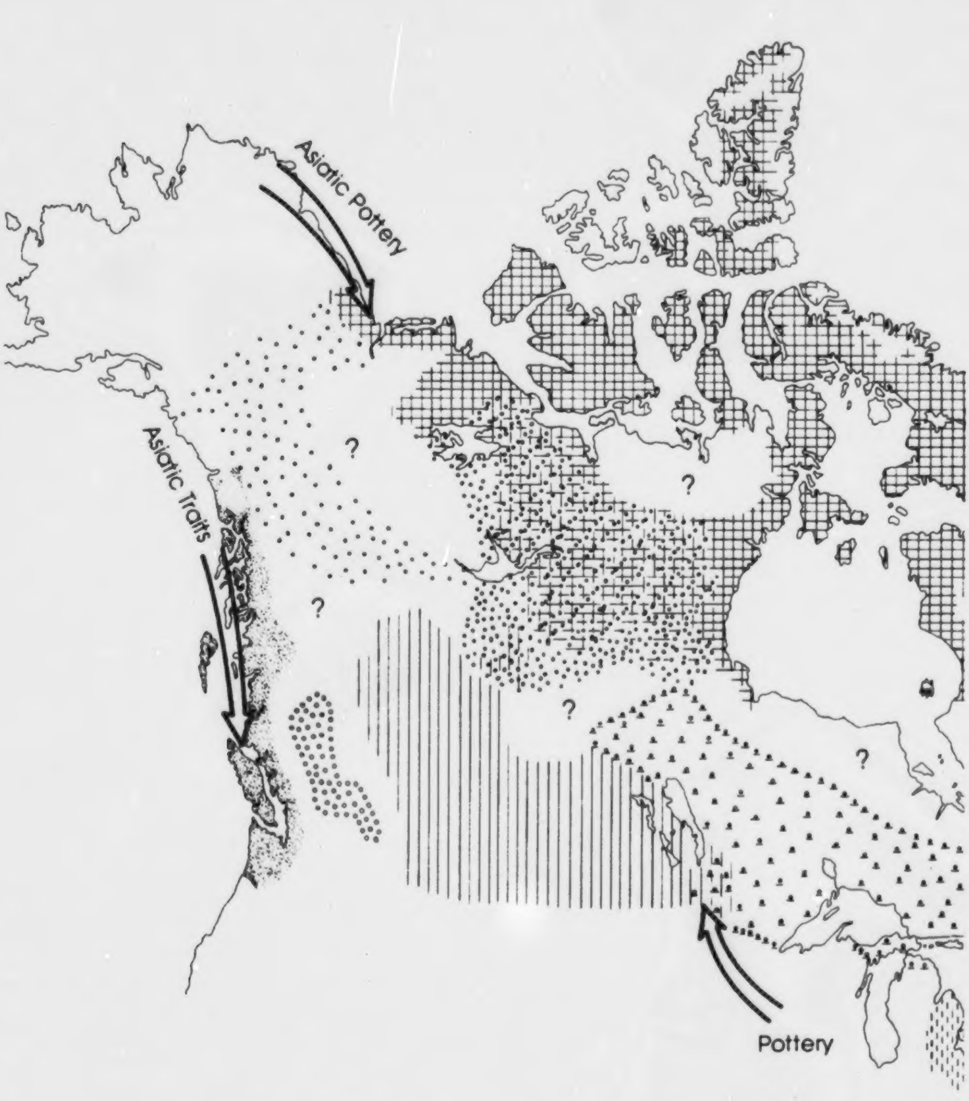
PROLOGUE TO PERIOD IV

By 1,000 BC environmental conditions in Canada were similar to those encountered by European colonizers. Native populations in the country were well established in their various territories with their cultures, in most instances, being clearly derived from the preceding period. Diffusion of technology, cosmological beliefs, and other cultural systems was the major stimulus to cultural change. Much of this diffusion, however, was in the form of stimulus diffusion whereby a regional population not only adopted an innovation but modified it in order to accommodate their particular cultural needs thus complicating the process of tracing diffusion routes. Two major innovations which both appeared in eastern Canada at approximately the same time were knowledge of pottery vessel manufacture from the south and the bow and arrow weapon system from the northeast. Pottery, which is fashioned in a plastic state and then fired to a stone-like hardness, is especially useful to archaeologists as it leaves a particularly sensitive record of cultural relationships and developments. Pottery characteristics of form, motif, and tool impression variety can be used as chronological indicators and cultural identifiers. While pottery was independently invented in a number of places around the world the earliest pottery in North America comes from what is now the southeastern United States where it was introduced more than 5,000 years ago. Its ultimate place of origin was likely in South America. As pottery appears approximately 1,000 years earlier in eastern North America than southwestern North America its route of diffusion was probably through the chain of islands in the Caribbean Sea called the Antilles. These islands acted as a bridge between northeastern South America and Florida. In contrast to pottery the bow and arrow was an Asiatic innovation which appears to have entered the Western Hemisphere with Early Palaeo-Eskimo culture (Wright 1995: Chapter 21). Both of these technological advances eventually spread across much of North America.

On the east coast of the Maritime provinces the archaeological record of Late Maritime culture has been partially obliterated by a sinking coastline. There is evidence, however, that a burial cult originating in the Ohio Valley was exerting influences on the local populations prior to 500 BC. Such influences, associated with prescribed mortuary practices, likely arrived in the Maritimes via the St.Lawrence River and included burial mound construction and exotic Ohio Valley objects used as grave offerings to the deceased. Moving westward into the interior of the Great Lakes-St.Lawrence region Late Great Lakes-St.Lawrence culture was represented by a number of regional pottery vessel style complexes as well as other traits. All of these regional cultural complexes, however, appear to have developed out of the preceding Middle Great Lakes-St.Lawrence culture of Period III. Mortuary ceremonialism, once again originating in the Ohio Valley, appears as early as 600 BC and subsequent developments eventually led to a fluorescence of burial mound ceremonialism in the Rice Lake region of southeastern Southern Ontario around 2,000 years ago. At this time silver from the Cobalt area in Northern Ontario was added to the 7,000 year old copper metal working tradition and was widely traded to the south. Throughout most of Québec north of the St.Lawrence River Late Eastern Shield culture retained the earlier Middle Shield culture way of life and, while the bow and arrow was adopted, pottery vessels were largely rejected except along the southern margins of the Canadian Shield. Late Western Shield culture (Laurel), occupying extreme western Québec, Northern Ontario, much of Manitoba, a small northeastern portion of Saskatchewan, and the northern margins of adjacent states, is differentiated from its eastern neighbours in the Shield by the whole-hearted adoption of pottery and a major change in the nature of the chipped stone tool industry. Local populations along the Minnesota-Ontario border became involved in southern burial mound ceremonialism and would be responsible for the construction of the largest earthen structures in pre-European Canada. Bison continued to represent the staff of life for Late Plains culture and earlier traits, like the use of bison jumps and pounds, the dog travois, tipis, pemmican production, and medicine wheel ritual were not only retained but elaborated upon. Around 2,000 years ago pottery was introduced from the east but never became a significant trait of Late Plains culture. It is speculated that the bow and arrow weapon system was also introduced to the Plains from the east, possibly late in Period III from Middle Shield culture or from the subsequent Late Western Shield culture. Pit house villages of Late Plateau culture increased in size and complexity, particularly so in the Lillooet region where some have argued for the existence of ranked societies. While a reliance upon salmon continued from the preceding period there is evidence that after 500 BC plant foods, such as bitterroot, mountain potato, wild onion, and balsam root became increasingly important. Throughout most of Period IV developments in Late West Coast culture clearly anticipate the historically documented cultural pattern of the West Coast. Large plank house villages become common. The shaping of stone implements and ornaments by pecking and polishing increases in popularity. There is also evidence for an intensification of the processes responsible for the appearance of socially ranked societies and an associated increase in warfare. Around the end of Period IV the bow and arrow was introduced to the coast from the Canadian Plateau. The most dramatic event within Late Northwest Interior culture was its expansion to the east into the barrengrounds and northern forest margins of the eastern Mackenzie and southern Keewatin districts of the Northwest Territories as well as into the northern margins of Alberta, Saskatchewan, and Manitoba. Middle Palaeo-Eskimo culture was concentrated in an extensive region centred on Baffin Island during Period IV. While sharing many traits with their Early Palaeo-Eskimo ancestors they differed in a number of respects such as constructing semisubterranean winter houses and shaping many stone tools by grinding. On some sites permafrost conditions have preserved objects manufactured from driftwood and provide a glimpse of a rich woodworking industry that included microblade and burin handles, kayak and sled parts, and other objects not encountered in the usual archaeological deposits.

For the most part, the cultural developments of Period IV consisted of an intensification and elaboration of developments identified in the preceding Period III. Cultural regionalism continued apace. For the first time, however, new burial ceremonialism that included the construction of earth burial mounds was added to the earlier mortuary systems. Such influences had their ultimate origins to the south but by the time they reached eastern Canada they had been modified to accommodate local needs. It is speculated that mortuary elaboration in both the Rice Lake and the Rainy River regions of Ontario was supported by the invention of methods that permitted the preservation of wild rice. As production of a surplus of food in the form of parched rice equalled wealth it appears to have resulted in status inequalities. The evidence for the existence of ascribed status, with its accompanying social inequality, was very local and alien, as a whole, to both Late Great Lakes-St.Lawrence culture and Late Western Shield culture. It was only temporarily maintained in the east but continued into Period V in the Rainy River region of Northern Ontario. The foregoing highlights the point that while cultural influences did range across the enormous expanses of North America via the process of diffusion, regional cultural forces moulded the external influences in distinctively local ways. No region of Canada was unaffected by cultural diffusion, whether the innovations originated in South America or Asia and whether they pertained to technology or cosmological belief systems.


Asiatic Pottery
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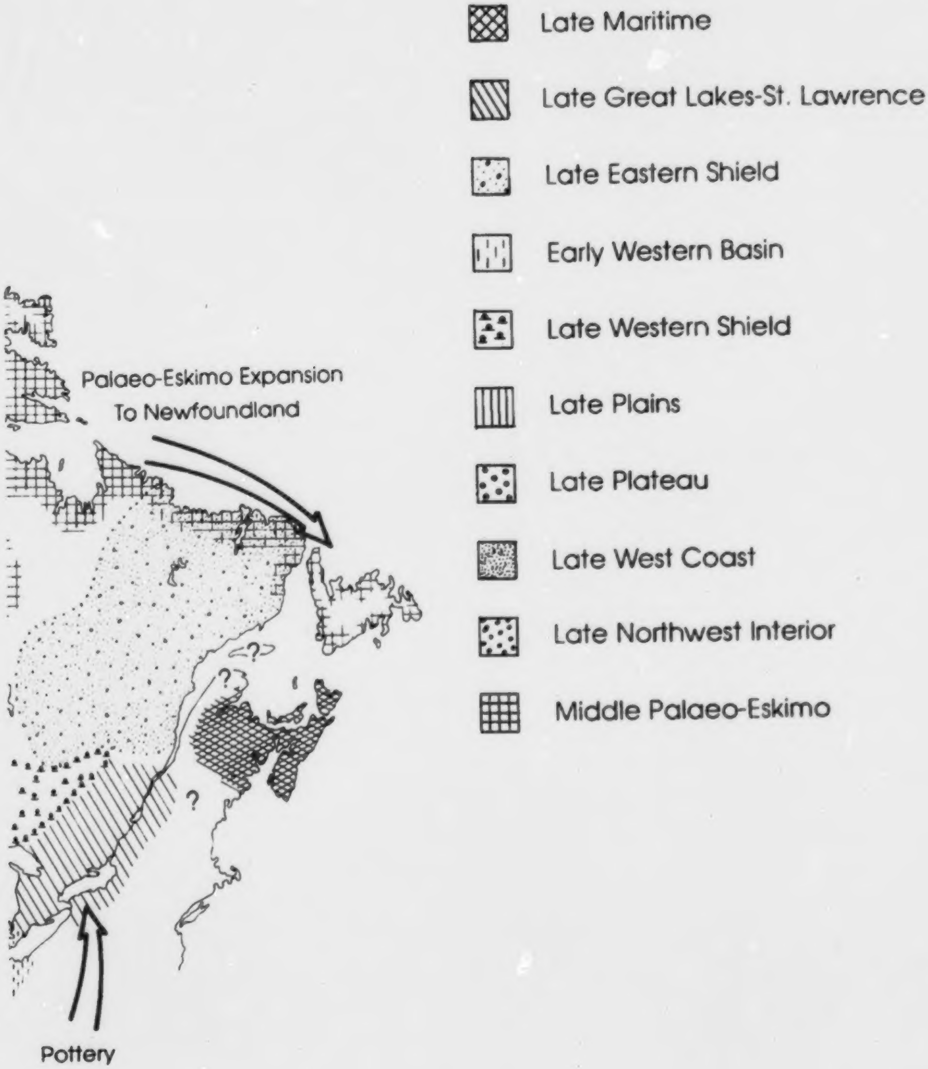
MAP IV: CULTURAL DISTRIBUTIONS, 1,000 BC toAD 500 As with the cultural distri-
published in Plate 8 of the Historical Atlas of Canada (Harris and Matthews 1987) from which
geographic distributions. Like earlier maps, Map IV is intended to act as a simplified geographic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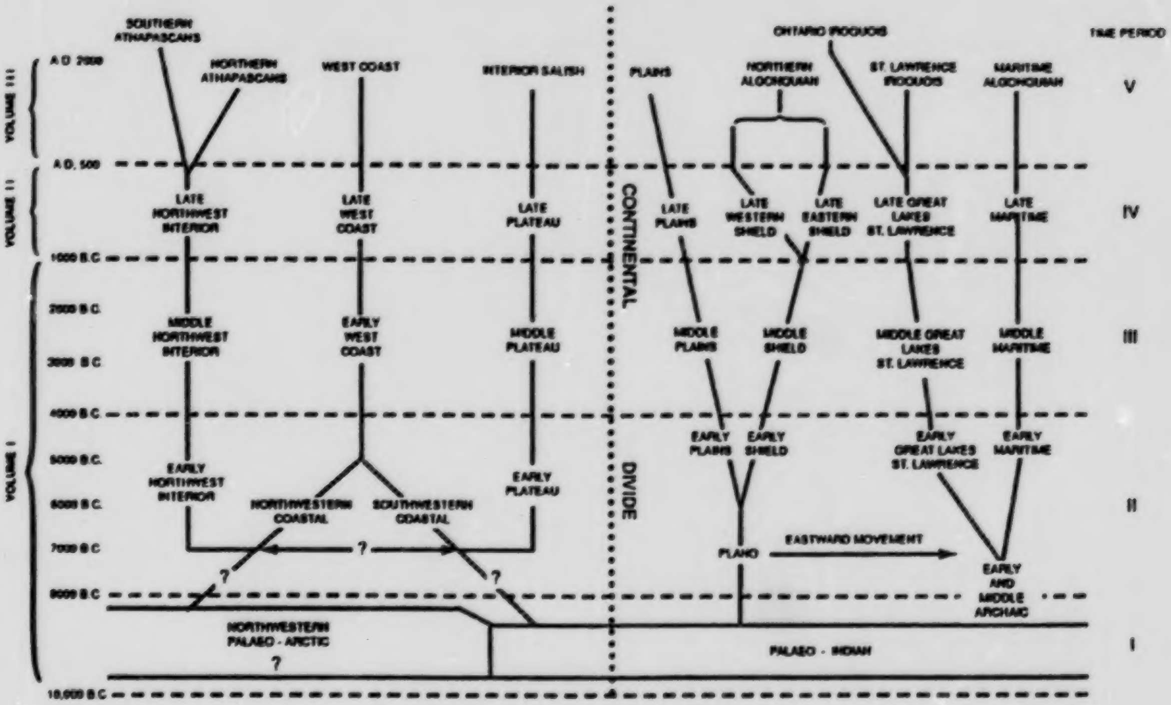
Late Great Lakes-St. Lawrence
Late Eastern Shield
Early Western Basin
Late Western Shield
Late Plains
Late Plateau
Late West Coast
Late Northwest Interior
Middle Palaeo-Eskimo
Palaeo-Eskimo Expansion To Newfoundland
?
?
?
Pottery

bution maps in Volume I there are a number of changes in this map relative to the information it has been adapted. Most changes relate to culture name changes and do not effect cultural guide to the cultures discussed in Volume II (Drawing by Mr. David W. Laverie).


VOLUME III
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A.D. 2000
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7000 B.C.
8000 B.C.
10,000 B.C.
SOUTHERN ATHAPASCANS
NORTHERN ATHAPASCANS
WEST COAST
INTERIOR SALISH
PLAINS
NORTHERN ALGONQUIAN
ONTARIO IROQUOIS
ST. LAWRENCE IROQUOIS
MARITIME ALGONQUIAN
TIME PERIOD
V
IV
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LATE NORTHWEST INTERIOR
LATE WEST COAST
LATE PLATEAU
CONTINENTAL
DIVIDE
LATE PLAINS
LATE WESTERN SHIELD
LATE EASTERN SHIELD
LATE GREAT LAKES ST. LAWRENCE
LATE MARITIME
MIDDLE NORTHWEST INTERIOR
EARLY WEST COAST
MIDDLE PLATEAU
MIDDLE PLAINS
MIDDLE SHIELD
MIDDLE GREAT LAKES ST. LAWRENCE
MIDDLE MARITIME
EARLY NORTHWEST INTERIOR
NORTHWESTERN COASTAL
SOUTHWESTERN COASTAL
EARLY PLATEAU
EARLY PLAINS
EARLY SHIELD
EARLY GREAT LAKES ST. LAWRENCE
EARLY MARITIME
?
PLANO
EASTWARD MOVEMENT
EARLY AND MIDDLE ARCHAIC
NORTHWESTERN PALAEO - ARCTIC
PALAEO - INDIAN

CHART I: A SCHEMATIC AND SIMPLIFIED CHRONOLOGY OF THE ARCHAEOLOGICAL HISTORY OF CANADA
This chart also appeared at the end of Chapter 1 in Volume I and is reproduced here in order to assist the reader in following the geographic and temporal relationships of the various Period IV cultures described in Volume II. The five time periods are demarcated from one another by a dashed line while the time periods considered in each volume are indicated on the left. Geographically the chart is oriented with the East to the right and proceeds across to the West on the left. Palaeo-Eskimo and subsequent Inuit cultural developments are discrete from the above and are excluded as is the Early and Late Western Basin culture occupation of extreme southwestern Southern Ontario.

CHAPTER 22

LATE MARITIME CULTURE

Précis:

Late Maritime culture occupied the Maritime provinces, the Gaspé region of Québec, and northern Maine. Limitations in the archaeological evidence have provided considerable latitude for competing views regarding the culture history of Period IV. The major problem facing archaeology has been the destruction of much of the archaeological evidence by an encroaching sea. Crustal downwarping has resulted not only in the erosion of countless archaeological sites but also the removal of whole segments of archaeological time from certain areas. As has been aptly noted, "It is impossible to know what volumes of American prehistory now lie on the continental shelf but it would be most unwise to attempt to reconstruct that prehistory as though they never existed" (Brennan 1974: 92). Despite the influence of a number of local factors, the rates of land submergence along the coasts of the Maritime provinces appear to have been relatively constant (Scott et al. 1987). Between 4,500 and 2,000 years ago sea level rise decreased from the earlier high of 1 m per century to the present 15 cm per century. Thus the time span from late Period III to early Period IV appears to have been one of increasing coastal stability, an important factor in the establishment and maintainance of the complex ecosystems upon which Late Maritime culture populations depended (see Figure 58). Despite widespread site destruction, there were certain locales where continuous human occupation was possible for nearly 6,000 years (Bourgue 1975). With so much of the evidence 'out to sea' it is understandable why conflicting interpretations abound. Even interior sites removed from the threat of the sea, which could have the potential to at least partially rectify the coastal losses, have been ravaged by turn of the century logging, dams, and ongoing construction programmes.

There is a consensus that with the introduction of pottery vessels to Late Maritime culture, beginning sometime prior to 500 BC, subsequent cultural developments led directly to the Micmac, Maliseet, and Passamaquoddy peoples encountered by Europeans in the early 17th century. While quite important to archaeologists, the appearance of pottery vessels simply represented an additional element of technology that was incorporated into the tool kit of the previously pre-pottery people. Throughout much of eastern North America there is an archaeological convention whereby the appearance of pottery is used as the artifact which ends the Archaic period and introduces the Woodland period. Initially it was believed that pottery manufacturing was associated with increasingly complex societies involved in horticulture and burial mound ceremonialism and that it ushered in a new stage of cultural development significantly more sophisticated than the preceding Archaic. Subsequent research has demonstrated that throughout North America pottery was simply an introduced element of technology that had no appreciable effect upon earlier lifeways. In some places the stone bowls used formerly were simply replaced with pottery replicas.

Archaeological evidence pertaining to the transition between the Archaic and Woodland periods is limited. Indeed, the period between 1,500 and 500 BC has been referred to as a cultural hiatus (Keenlyside 1984: 2). As was outlined in Period III (Wright 1995), there is considerable debate whether the Late or Terminal Archaic peoples of the region participated in a Middle Maritime culture (Maritime Archaic), a Middle Great Lakes-St.Lawrence culture (Laurentian Archaic), a Susquehanna Archaic culture, or some amalgamation of the preceding. The northward spread of the Susquehanna Archaic culture appears to only partially penetrate the Maritime provinces and is, therefore, largely peripheral to events during this period. Both the meagre evidence and the potentially treacherous crutch of parsimony suggest that the Late Archaic peoples of the Maritime provinces were derived from an indigeneous Middle Maritime culture and that Late Maritime culture represents a direct descendant of that culture. This inference is premised on technological, settlement pattern, and subsistence continuities.

The Late Maritime culture tool kit is composed of large stemmed and broad side-notched or expanding stemmed projectile points, large end scrapers which become increasingly smaller and common through time, a limited number of polished stone celts, abraders, and other rough stone tools. Finely fashioned pottery vessels, generally decorated with some form of toothed implement, appear by 500 BC and possibly earlier. The method of pottery manufacture, as well as the motifs, techniques of decoration, and general vessel form, are all similar to pottery from sites in the upper St.Lawrence Valley of Québec and Ontario. In this regard, the early pottery of the Maritime provinces represents the easternmost extension of a widespread pottery tradition that was distinctly northern in character and distribution. A quite different pottery tradition consisting of beaker shaped vessels, most often impressed on both the interior and exterior with a cord-wrapped paddle, has been recorded from contemporary sites immediately to the south. Although there has been the suggestion that this particular pottery may have entered New Brunswick with the Meadowood complex of Late Great Lakes-St.Lawrence culture, the presence of this complex has not been convincingly demonstrated and is largely based upon some very general burial traits and projectile point forms (Deal 1986; Ferguson 1988: 17-18; Turnbull and Allen 1988).

The aforementioned two different pottery traditions are geographically discrete with the stamped pottery occurring to the north of the southern cord-impressed pottery. An important exception to the foregoing is a northern salient of the cord impressed pottery tradition in the St.Lawrence Valley between, approximately, Trois-Rivières and Québec City. The north-south relationship of the two pottery traditions in the Maritimes is equivalent to that of the interior of North America with regard to Late Great Lakes-St.Lawrence and Late Western Shield cultures relative to their southern neighbours. Plain pottery, sometimes possessing simple incised or punctate decorations, is evidently early and possibly associated with both the cord-impressed and the dentate stamped pottery traditions. It has been necessary to address this matter of pottery traditions and their distributions as pottery has frequently been used by archaeologists to identify archaeological cultures, all too often to the exclusion of other considerations.

Late Maritime culture occupation of coastal and riverine sites frequently extends into the following time Period V (AD 500 to European Contact). In the Passamaquoddy Bay region of southeastern New Brunswick, where extensive archaeological reconnaissance and excavation have been carried out, sites are characterized by south to southeast exposures adjacent to mud flats rich in shellfish, canoe landing/launching beaches, and in close proximity to freshwater (Sanger 1985). Faunal analysis suggests that the coastal shell midden sites represent cold weather occupations although some sites could have been occupied on a year-round basis. Interior riverine sites, situated near swifts and rapids, were likely occupied from the spring through summer to take advantage of the spawning concentrations of fish such as capelin and smelt (*Osmeridae* sp.), sturgeon (*Acipenser oxyrhynchus*), gaspereau (*Alosa pseudoharengus*), shad (*Alosa sapidissima*), and salmon (*Salmo salar*). Fall and winter concentrations of Atlantic eel (*Anguilla rostrata*) and tomcod (*Microgadus tomcod*), respectively, would also have been exploited (Scott and Scott 1988).

Pertinent to the Maritimes has been the suggestion that along the New England coast shellfish gathering was a limited activity until terminal Archaic and subsequent 'Woodland' times when it became increasingly important (Braun 1974: 582). Since the majority of the coastal Archaic period sites have likely been destroyed by rising sea levels it is simply not known how long shellfish exploitation has been a significant subsistence activity. Surviving Middle Maritime culture shell midden sites in Maine, such as the Nevin Shellheap (Byers 1979) and Turner Farm (Bourque 1976), suggest that the destruction of Period III shell middens is a more appropriate explanation for the scarcity of early shell middens than any earlier disinterest in a nutritious, easy to harvest and process, and locally abundant resource. The opinion that intensive shellfish gathering was associated with interior riverine oriented Late Archaic populations adapting to the littoral resources of the coast, ignores the probability of a much earlier history of shellfish gathering. While the relative instability of the coast during Middle Maritime culture times could have curtailed the establishment of productive shellfish beds in many regions, it was not likely to have affected all areas.

In attempts to explain the scarcity of archaeological evidence relating to the transition from Archaic to Woodland a number of scenarios or models have been proposed. These have ranged from propositions of environmentally disrupted ecosystems forcing interior hunters to rely on coastal littoral resources to environmental stability permitting effective exploitation of coastal resources by northward advancing pre-adapted Susquehanna Archaic peoples or their descendants who pushed the indigenous populations aside or eventually merged with them. The evidence of a major environmental flux of sufficient magnitude to elicit such drastic readjustments is weak. It is apparent that both Late Maritime culture and their ancestors possessed adaptive systems that were broadly based and flexible. The cultural hiatus which some see or the environmentally induced rapid changes preceived by others are not responsible for the poorly understood nature of the archaeological record of this time. Rather, it appears that inadequate analytical methods may be largely responsible for the perceived break in cultural continuity. It is not a coincidence that the confusion in interpreting the archaeological record first occurs with the disappearance of a number of Late Archaic diagnostic traits such as gouges, ground slate lances-projectile points-knives, and plummets, specific mortuary practises, and the initial appearance of a major new class of artifacts; pottery. The difficulty with the archaeological record during Period IV could be the current lack of convenient artifact 'index fossils'. As a number of researchers have noted, however, the chipped stone element of the technology exhibits clear continuities between the pre-pottery and pottery producing components of sites. This continuity is reinforced by correspondences in Late Archaic-Ceramic Period settlement patterns and subsistence.

A significant archaeological event in the Maritimes and the Gaspé involved the appearance of the Adena mortuary complex from the Ohio Valley. Why the earlier elaborate mortuary ceremonialism of Middle Maritime culture disappeared to eventually be replaced nearly 1,000 years later by mortuary practices originating in the interior of North America some 1,700 km away cannot be answered. If the Adena mortuary complex expansion to the Maritimes was related to an expanding trade network what was the purpose of that trade, where is the archaeological evidence of secular as opposed to religious exchange, and why did the direction of contact change to the interior of the continent away from earlier routes along the Atlantic coast? What was happening during the 1,000 year gap between the two mortuary systems of Middle and Late Maritime cultures? And, as was the case with both Late Great Lakes-St.Lawrence culture and Late Western Shield culture, why did only an apparently very small proportion of Late Maritime culture people participate in the introduced mortuary ceremonialism? Even though the highly prescribed nature of Adena mortuary ceremonialism, recognized throughout an extensive area of northeastern NorthAmerica, suggests the existence of an overseeing priesthood or priest-shaman class, there is also clear evidence of local participation in ceremonial activities as reflected in implements manufactured from local materials and in local styles appearing in the graves. The relatively rigid adherence to a specific set of burial practices and the use of specific classes of grave offerings, including objects from the Ohio Valley, would appear to support the proposition that some highly structured form of sanctified behaviour emanating from an Ohio Valley centre is being reflected in the evidence. Late Maritime culture participation in this religious manifestation, albeit limited, included a burial mound near the Miramichi River which, within living memory, was still regarded as a sacred place by the resident Micmac population. This suggests the existence of a possible 2,500 year old oral tradition. Another related burial mound, largely destroyed by construction activity, has been identified outside of Halifax (Dr. Steven Davis, St.Mary's University, Halifax: personal communication and examination). Site distributional evidence suggest that the Adena mortuary complex spread to the Maritime provinces via the St.Lawrence River rather than northward along the Atlantic coast.

Cultural origins and descendants:

Despite confusion surrounding the end of Period III and the beginning of Period IV in the Maritime provinces and adjacent regions, there is agreement that pottery was added to the indigeneous Archaic tool kit around 500 BC and probably earlier. There is further agreement that there is cultural continuity from the beginning of the 'Ceramic Period', initiated by the adoption of pottery, to the historically documented Micmac/ Maliseet/Passamaquoddy peoples of the Maritimes and adjacent areas of Québec and Maine (Tuck 1984: 71). There are still many gaps in this proposed cultural continuity and, as noted, considerable disagreement regarding the origin(s) of the earlier peoples who constituted the cultural base of subsequent developments. Four possible origin scenarios exist. Late Maritime culture people could be the descendants of either an invading Susquehanna Archaic population from the south or of an indigeneous Middle Maritime culture population. There are also the possibilities that the cultural origin of Late Maritime culture was an amalgam of indigeneous and intrusive populations or that a split of territory occurred in the Maritime provinces with Maritime culture retaining control in the north and the intrusive SusquehannaArchaic culture and their descendants occupying the southern margins of New Brunswick and probably parts of Nova Scotia. The second option or some combination of the second and fourth options would appear to be most likely at this time (Rutherford 1990: 175-176; 1990a: 331).

A major factor involved in the events surrounding the terminal Late Archaic populations in the Maritimes and elsewhere has been the sudden appearance of the Susquehanna Archaic culture which seems to have truncated the regional developmental sequence in adjacent Maine (Bourque 1976). This apparent cultural replacement of Middle Maritime culture by Susquehanna Archaic culture was both technological and cosmological (Dincauze 1975: 32) but curiously, despite claims to the contrary, nowhere along the New England coast does the occupation of shell midden sites change during the hypothesized replacement period (Braun 1974) although there were shifts in the emphasis placed upon the species of animals exploited (Bourque 1975). As in the north, the appearance of Susquehanna Archaic has caused major interpretational problems in southern New England leading to the proposal that the culture co-existed for a time with the local Archaic populations and eventually the two populations amalgamated (Dincauze 1975; Ritchie 1969). In the Maritimes it has been suggested that the southern margin of New Brunswick acted as a kind of frontier with Middle Maritime peoples to the north of the Saint John River and Susquehanna Archaic peoples to the south (Tuck 1984: 41). Subsequent developments after the advent of pottery, however, indicate that southern New Brunswick, along with northern Maine, participated in the same cultural pattern rather than with that of southern New England.

Projectile point types have been extensively used to explain events during the confusing transition of Archaic to Woodland. Based primarily upon the excavation of the stratified Oxbow site in northeastern New Brunswick, it has been suggested that by 1,000 BC Middle Maritime and Susquehanna Archaic cultures merged in the Maritimes. Just prior to 500 BC, intruding Adena influences from the Ohio Valley were assimilated by the local populations. More projectile point type invasions from the south around 100 BC are proposed (Allen 1980; 1981). Cultural assimilation and/or replacement based upon the appearance and disappearance of projectile point types rather than the total constellation of archaeological cultural systems is a questionable procedure. This is particularly so when applied to hunting populations which generally lacked both the economic base and the social need to launch territorial invasions. It is more likely that similarities seen between certain projectile point styles from southern New England and New York reflect widespread weapon tip horizon styles rather than intruding populations. Such a suggestion gains support from the fact that the earliest pottery in the Maritimes and adjacent Maine relates to the upper St.Lawrence River rather than southern New England and indicates diffusion from the west (Allen 1980: 148). The various elements that constitute any technology are not equal in terms of their ability to throw light on ethnicity. Some items are typical of very local developments while others, more amenable to widely shared requirements and thus diffusion, were adopted by many different regional populations. Projectile point styles, for example, appear to lack the same degree of local ethnicity as textiles (see Petersen 1996). Details of textile and cordage construction can be determined from plasticene impressions of pottery that was once impressed with a fabric or cord-wrapped stick. Thus, certain categories of artifacts like projectile point styles represent horizon styles that cross-cut more locally based technological traits. Archaeological artifact classifications rarely address the issue of the variable time and space sensitivity of different categories of artifacts. A kaleidoscope of interconnected local ethnic traditions and widespread horizon styles must be accommodated in any effort to understand the nature of culture constructs.

An excellent example of the foregoing as it bears on local technological traditions comes from recent research along the southern coast of Maine. Study of cordage and fabric impressions on pottery suggested that there was continuity in the use of Z-twist/S-spin and Z-weft slant cordage and fabric construction from at least 1,000 BC to European Contact on the coast whereas in the interior from 1,000 BC to AD 1000 S-twist/Z-spin and S-weft slant elements dominated (Petersen 1996). These two areas are adjacent to one another and, using usual archaeological comparative processes, would be classified as a single culture construct. As noted with reference to the preserved fabrics and cordage from water-saturated sites on the West Coast (Chapter 28) forms of textiles, basketry, and cordage can represent more accurate evidence of regional cultural traditions than the stone and bone assemblages generally used by archaeologists to define a particular culture. Following on from the foregoing with a fabric analogy, the local textile/cordage traditions would represent the vertical elements of the fabric, the warps, around which the horizontal elements or wefts were woven. The horizontal elements, represented by such tool types as projectile points and harpoons, are part of a broader co-tradition and do not possess the same degree of local ethnicity as the warps of the hypothetical fabric analogy. As the early pottery of the Maritime provinces and northern Maine lack cord and textile impressions, it is impossible to apply this particular research approach to all but the latest Period IV sites. The research results from southern Maine, however, constitutes a clear warning of the hazards of using simplistic typologies that are only representative of a limited portion of the technological system to identify ethnic groupings of people. Differentiating between technological transfers of varying intensity, duration, and scope and an actual population invasion can be a complex process that calls for the application of all of the comparative abilities archaeology has at its disposal.

To reiterate, there appear to be four major factors that have blurred our understanding of the origins of Late Maritime culture. First, sea level changes have altered local food resource availability in both positive and negative ways thus changing settlement patterns and contributing, along with coastal site erosion, to a reduction in archaeological visibility. Second, diffused technological elements from the south (certain projectile point styles) and the west (early stamped pottery) have been treated as actual population movements from these regions rather than the diffusion of elements of technology. Third, the disappearance of the Middle Maritime culture mortuary complex and the appearance of the Adena mortuary complex, while undeniably significant events, have been given too much weight in terms of their overall impact upon the populations involved. And fourth, the heavy reliance upon artifact 'index fossils', such as projectile point types, pottery types, or single culture systems such as mortuary complexes, as a basis for inferring population movements and relationships between people instead of basing such inferences upon the total constellation of cultural systems like technology, subsistence, settlement patterns, and cosmology, has further muddied the undeniably turbid waters of the transition from Period III to Period IV.

A majority of radiocarbon dates pertaining to Late Maritime culture come from sites in New Brunswick and, in particular, the stratified Oxbow (Allen 1980) and Fulton Island (Foulkes n.d.) sites on the Miramichi River and the St.John River, respectively. Dates from other sites can be found in Black 1988, Bishop and Black 1988, Pearson 1970, Turnbull 1976, 1980, and Wilmeth 1978. The most current and informative list of radiocarbon dates, which includes dates from Maine and the Maritime provinces as well as adjacent areas, can be found in Petersen and Sanger (1991). Dates on shell, on samples lacking clear cultural contexts, or with sigma ranges beyond 200 radiocarbon years, have been excluded from the calendrical age estimates given in this Chapter. As radiocarbon dates are constantly being run and are often not readily available in published form the foregoing references should be regarded as a sampling of dated sites and not a comprehensive listing.

Technology:

Despite the number of Late Maritime culture sites that have been excavated it is not possible, with one exception (Benmouyal 1987: 213-254), to extract from the published literature a single adequate size sample recovered from a discrete component. The problem is straightforward. The occupations of the large winter to year-round, multi-component shell midden sites on the coast cannot be isolated into discrete components due to disturbance (e.g. human activity, tree falls, animal burrowing, etc.) while, in contrast, the stratified riverine summer fishing sites, with their clear component separation, simply have not produced adequate samples from individual components. It is necessary, therefore, to rely upon a qualitative rather than a quantitative evaluation of the technology. This is best done by considering specific examples of major riverine sites. The term 'riverine' has an estuary aspect as many of the sites are located on rivers where fresh and salt water meet.

Pottery vessels first appear in Late Maritime culture sites at the beginning of Period IV and represent the most striking new addition to technology. A brief digression at this point may be useful. The knowledge required to manufacture pottery first appeared in what is now the southeastern United States more than 5,000 years ago and probably originated in northern South America.This knowledge diffused to the north and while people adopted the technical requirements of the innovation they did not replicate the southern forms of pottery vessels. A classic example of what is called stimulus diffusion as opposed to direct diffusion, is found in the northeastern United States. Here the Susquehanna Archaic culture populations, who had manufactured cooking vessels from soapstone (steatite or talc) prior to the appearance of pottery, replicated their original stone vessel forms in pottery. These early pottery vessels were often tempered with fragments of soapstone vessels. Other beaker-shaped pottery vessels lacking earlier stone or southern pottery prototypes probably represent reproductions in pottery of former perishable containers such as fabric baskets. Pottery vessels eventually break and the fragments, called sherds, are virtually indestructible and thus are commonly found in archaeological deposits. Pottery is particularly useful to archaeologists as vessel form, decorative motifs, and techniques of decoration (e.g. the wide range of different types of tools that produce quite different impressions in the wet clay) are characteristic of different time periods and cultures. Thus pottery provides archaeologists with an exceptionally sensitive chronological and cultural 'index fossil'. Although some might debate the point, in most instances, pottery analysis provides a tighter control of time and space than any segment of the stone tool industry, including projectile points. Certainly as a single artifact class, pottery provides archaeology with greater control over the processes of culture change by being a medium in which concepts of form, motif, and impression techiques applied to a malleable substance (wet clay) are preserved by sun drying followed by firing. As noted in the **Précis**, there were two major pottery traditions in eastern North America, a northern tradition characterized by decoration produced with toothed implements and a southern tradition where the pottery was impressed on both surfaces with a cord-wrapped paddle implement. Other attributes, such as distinctly different wares and vessel form, also distinguish between the two traditions. The northern pottery tradition prevailed in Late Maritime culture. In a recent study of pottery characteristics and developments in the Maritime provinces and adjacent Maine (Petersen and Sanger 1991) the pottery sequence is broken into seven time segments. With reference to Late Maritime culture these include the following: Ceramic Period 1 (3050-2150 BP or 1,200-200 BC); Ceramic Period 2 (2150-1650 BP or 200 BC-AD 250); and Ceramic Period III (1650-1350 BP or AD 250-800). Ceramic Period

I is attributed to what is here referred to as the southern pottery tradition characterized by a cord-impressed surface treatment while Ceramic Period 2 and 3 pertain to the northern pottery tradition of dentate stamped pottery. These two pottery traditions are identified as distinct pottery horizon styles. While it is recognized by Petersen and Sanger that these pottery traditions or horizons may be contemporary and that the southern tradition is barely present in the Maritimes and much of Maine (Petersen and Sanger 1991: 131) they still feel that eventually the two traditions will be demonstrated to be sequential with only a short period of contemporaniety. This position is taken despite the fact that more than half of the dated Ceramic Period I pottery relates to styles typical of the northern tradition (Ibid: Appendix 7.1).

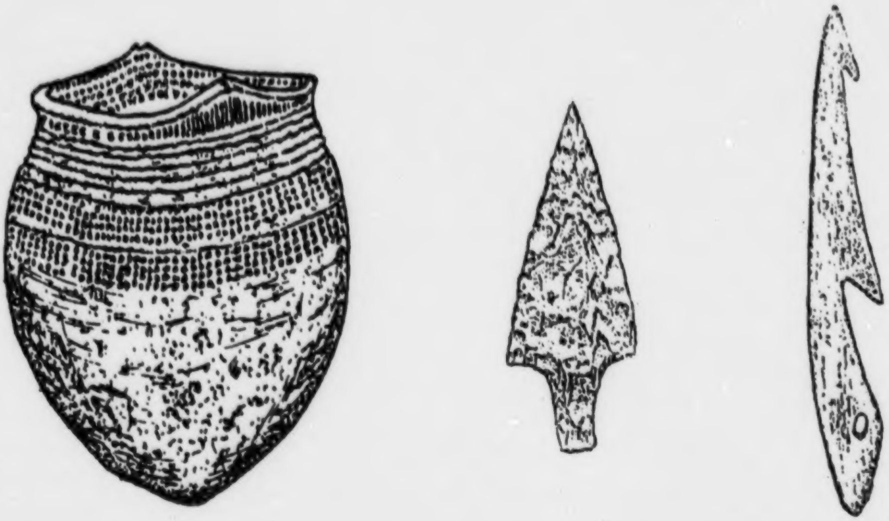


FIGURE 57: LATE MARITIME CULTURE ARTIFACTS The pottery vessel on the left is an example of the dentate stamped decorated pottery characteristic of the northern pottery tradition in Late Maritime culture. The two peaks along the rim of the vessel are called castellations and are a common decorative feature not found in the southern pottery tradition. The pottery vessel was adapted from McIntosh (1909). In the centre of the Figure is a typical chipped stone projectile point while to the right is a unilaterally barbed bone harpoon with line or rivet attachment hole. (Drawings by Mr. David W. Laverie. Scale: variable).

The Oxbow site is an important Late Maritime culture site situated on the Miramichi River drainage of northeastern New Brunswick adjacent to waters rich in seasonal fish runs (Allen 1991). Archaeological deposits stratified by natural sedimentary processes span the entire 1,500 years of Period IV. Bone did not survive in the acidic soils. A projectile point sequence has been traced beginning around 1,000 BC with square and contracting stemmed forms that are replaced around 500 BC by broad side-notched forms and these, in turn, are suceeded by bipointed and contracting stemmed forms around AD 1 with the latter form continuing to AD 500 and into Period V (Allen 1980; Black and White Plate XXII). Most of the projectile point styles at this site are regarded by the excavator as introduced southern varieties that blended with local styles (Allen 1980: 132-133). The argument for a marriage of southern and northern projectile point forms is not convincing and the varieties in question are regarded here as developing local forms that shared certain general characteristics with widely distributed projectile point horizon styles. Pottery vessels appear possibly as early as 800 BC and are represented by plain vessels decorated with punctates or dentate stamp followed by other varieties decorated in various ways with toothed tools. A vessel from one of the lower deposits of the site is similar to a vessel from the nearby 400 BC Augustine Adena mortuary complex burial mound (Turnbull 1986: 19) reinforcing the early appearance of the northern pottery tradition in the region. Horizontals with various combinations of verticals and obliques represent the most common motif. A plain pottery variety is regarded as earliest at the site and is attributed to the advent of Adena influences into the region although undecorated pottery vessels are also characteristic of many other early pottery assemblages. Other than noting that red ochre nodules occur throughout the site, there is little additional information available on the technology.

Another major riverine stratified seasonal fishing camp situated on the Saint John River near its estuary is the Fulton Island site (Foulkes n.d.). A relatively unbroken sequence of occupation beginning around 1,000 BC extends to the period of European contact. As with the Oxbow site, bone preservation was absent or limited. Projectile points consist of straight to lobate stemmed varieties but the most common tools were flakes struck from locally available glacial drift cobbles. Some ground celts as well as sandstone abraders and hammerstones were also present. Bifacially flaked knives are rare and scrapers generally consist of the random flake type rather than more formal varieties. Pottery, which appears prior to 500 BC and continues into Period V, was not abundant. The earliest pottery is a punctated form followed by dentate stamped vessels around 250 BC and then rocker stamped and finally cord-wrapped stick impressed vessels towards the end of Period IV. Vessels were coil constructed with conical bases and have flat lipped, everted collarless or incipient collared rims, sometimes with opposing castellations. The two common methods of manufacturing pottery vessels are the earlier coil technique and the later paddle and anvil technique. In the former instance the pliable clay is rolled into long coils which are superimposed or 'coiled' over one another and then flattened to bind the coils together and form the body of the clay vessel. With the paddle and anvil techique a ball of wet clay of a size appropriate to that of the desired vessel is punched from the top to create a depression which will eventually become the interior of the vessel. Using the hand in the depression and a tool such as a paddle on the exterior the potter progressively builds up the clay to the desired form and thickness. When a pottery vessel is broken the fracture pattern will often reveal which manufacturing technique was used. For example, coil manufactured vessels frequently break along the juncture of adjoining coils whereas the breakage pattern with the paddle and anvil technique is more irregular.

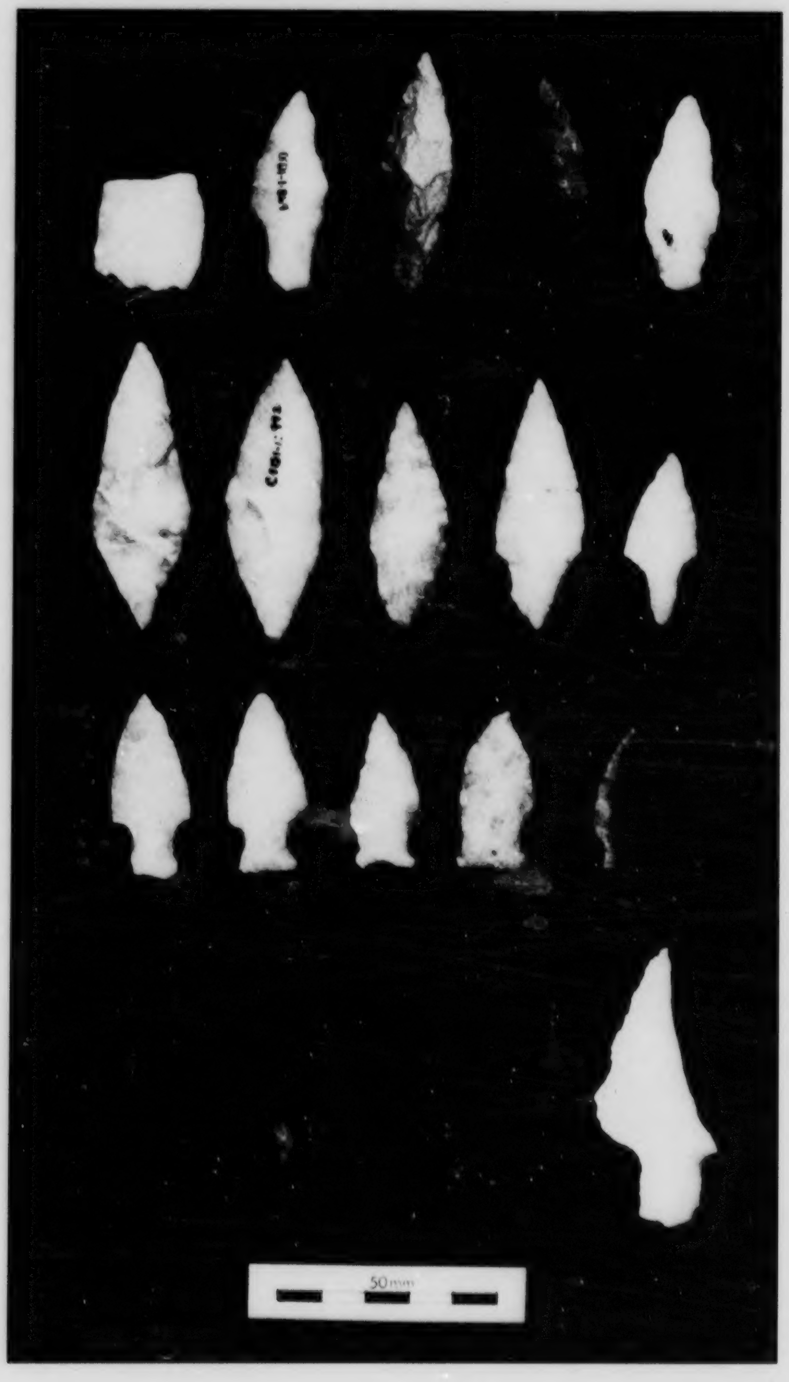
Projectile point style changes associated with the Oxbow and Fulton Island sites in New Brunswick indicate that contracting stemmed forms were not replaced until around AD 1000 by side-notched and corner-notched forms. In Maine, however, these forms apparently replaced the earlier stemmed points by AD 1 (Sanger 1979). Stemmed points early in Period IV average 7.3 mm in thickness (Rutherford 1990a) and would have been too thick to haft to a wooden arrow shaft. Rather, they were likely weapon tips used with spearthrowers or as hand thrusted spears. In general, it appears that the contracting stemmed points of terminal Middle Maritime culture gave rise to the parallel and expanding stemmed forms and bipoints of Late Maritime culture (Keenlyside 1980). A similar sequence of point style changes has been noted in southwestern New Brunswick and adjacent northern Maine (Deal 1986).The evidence suggests that, for whatever reasons, the bow and arrow weapon system, as identified by the small side-notched and corner-notched points, was not adopted in the Maritimes until well into Period V.

Some of the earliest pottery styles to appear across the Maritimes and northern Maine around 500 BC exhibit striking correspondences with pottery of the contemporaneous early Point Peninsula complex of Late Great Lakes-St.Lawrence culture in the upper St.Lawrence Valley of Québec and Ontario and adjacent northern New York and Vermont. It appears that this pottery style, typical of the northern pottery tradition, entered the Maritimes via the St.Lawrence River, probably from the Rivière-du-Loup region, into the headwaters of the Saint John River. In the Maritimes it constitutes the easternmost distribution of an early pottery style that stretched in a narrow band westward from the Atlantic to northern Minnesota and Manitoba. To the south of this northern distribution was a different and partially contemporaneous pottery tradition characterized by beaker shaped, undecorated vessels that were impressed with a cord-wrapped paddle on both the interior and exterior. A single sherd of this latter style has been recorded from the Minister's Island site, located in extreme southeastern New Brunswick (Sanger 1986: 148), and a number of sherds were found at another site associated with a cremated dog burial (Deal 1986: 72). Both pottery traditions were added to the regional pre-pottery technologies and are frequently found together on sites in Québec and Ontario reinforcing their contemporaneity. The southern pottery tradition, also a product of a somewhat different stimulus diffusion response to the northward spread of the pottery innovation from the southeastern United States, appears to have been marginal to the Maritime provinces. In this regard, during Period IV the Maritime region was more subject to influences from the interior of North America via the St.Lawrence River than it was to influences originating to the south along the Atlantic coast contrary to other opinion (Snow 1978: 69).

Around the same time that pottery arrived in the Maritimes from the interior of North America, the Adena mortuary complex of the Ohio Valley followed the same route to reach the Maritimes. While it has been argued that another Late Great Lakes-St.Lawrence culture unit, the Meadowood complex, dating between 1,000 and 500 BC, also penetrated New Brunswick (Turnbull and Allen 1988: 256) with both its mortuary system and technology, the evidence for such an event is not convincing. For example, the lower deposits of both the Oxbow and Fulton Island sites, which were contemporary with the Meadowood complex, lack Meadowood traits. The near absence in the Maritimes of the Vinette 1 pottery type characteristic of the Meadowood complex reinforces the questionable nature of this cultural assignment to certain materials in New Brunswick. The Sunny Corners burials on the Miramichi River (Wintemberg 1937), which are cited as evidence of the Meadowood mortuary system (Turnbull and Allen 1988), for example, do not possess clear evidence of either cremation or polished slate gorgets. Indeed, to judge from the single projectile point from this site, it more likely relates to the Middle Maritime culture mortuary system of Period III. In another instance in southwestern New Brunswick, a cremated dog burial associated with some Vinette 1 sherds is attributed to Meadowood (Deal 1986: 72) despite the fact that neither cremation nor Vinette 1 pottery are unique to the Meadowood complex and that Meadowood traits appear to be absent from the habitation debris of the site.

A rare facet of technology survived at the Augustine burial mound site due to the preservative qualities of the copper salts coming from beads included with the deceased (Turnbull 1976). Included among the recoveries were cedar bark matting, twilled and plaited basketry, cordage, and even a beaver incisor knife hafted in a wooden handle. Mats, bags, baskets, and clothing all appear to be represented by these textile fragments manufactured from plant fibres.

Other elements of technology such as grooved axes (Davis 1982; Preston 1974a) are likely associated with Late Maritime culture but until they are recovered under circumstances other than surface finds this cultural assignment cannot be proven. At the Mud Lake Stream site in the interior of southwestern New Brunswick the mixed


50 mm

BLACK AND WHITE PLATE XXII: CHANGING PROJECTILE POINT STYLES AS SEEN AT THE OXBOW SITE A virtually unbroken Late Maritime culture sequence from shortly after 1,000 BC to AD 500 and continuing into Period V is represented at this exceptional stratified site on the Miramichi River in New Brunswick. The earliest points are at the bottom of the Plate and become increasingly late ending with Period V arrowheads at the top (Photograph courtesy of Patricia Allen, Archaeological Services, New Brunswick).

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deposits, which pertained to Late Maritime culture as well as the subsequent Maritime Algonquian culture of Period V, Early and Late Ceramic Period in the regional classification system, respectively, produced numerous bifacially flaked knives, drills, gravers, scrapers, celts, hammerstones, abraders, and cobble tools as well as fragments representative of 34 pottery vessels decorated with dentate and pseudo scallop shell stamping and cord-wrapped stick impressions.

At the beginning of this section on **Technology** it was mentioned that only one Late Maritime culture site has produced an adequate sample from what appears to have been a relatively brief occupation. The site in question is the Ruisseau A site on the Gaspé coast situated adjacent to a local chert deposit (Benmouyal 1987: 213-254, Fig.31). Known in the regional cultural classification system as a "Gaspésienne récente" component, the site sits on a terrace 17 m above and 60 m back from the St.Lawrence River overlooking the mouth of a small creek. Ruisseau B and C occupations of the same site occur on progressively higher terraces and are accordingly earlier with Ruisseau B dating to around 2,500 BC and Ruisseau C being assigned to an Eastern Plano culture occupation. The Ruisseau A site, assigned here to a Late Maritime culture occupation, has been dated to around 100 BC (Benmouyal 1987: 228). Workshop chipping debris was abundant but among the finished or partially processed tools were the following: biface knives and preforms - 112 (45.9); random flake scrapers - 57 (23.4); side scrapers - 26 (10.7); projectile points - 16 (6.6); end scrapers - 11 (4.5); flake and cobble choppers - 11 (4.5); flake knives? - 9 (3.7); and abraders - 2 (0.8). The preceding tool categories are based upon some reinterpretation of the data given on Tableau 15 and in the written descriptions (Ibid: 228-254). The fashioning of stone into tools and preforms at the site is evident from the high frequency of preforms as well as the recovery of 34 cores and 20,550 flakes. Contracting to straight stemmed projectile points dominated the point category with bipoints and small oval points or knives representing minor forms. Both the stemmed and bipointed points as well as the bipointed biface knives have much closer parallels with Late Maritime culture stone technology from the Maritime provinces than they do with either Late Great Lakes-St.Lawrence culture or Late Eastern Shield culture.

Before leaving this section it is necessary to comment on a myth which is becoming increasingly entrenched in eastern coastal archaeology. This refers to the opinion that the stone gouge was specifically used to construct dugout canoes and that the disappearance of the gouge just prior to Period IV and the reduced importance of polished stone celts in general, herald the increasing use of birch bark for watercraft construction (Snow 1980: 298). The stacking of one assumption upon another can become truly remarkable as exemplified by the following statement: "...the shift to moose hunting would have entailed the development of birch bark canoes and the abandonment of dugouts, which in turn would have curtailed the shift in maritime activities from sea hunting to shellfish collecting and other relatively pedestrian activities" (Snow 1975: 58). Historical documentation indicates that dugouts were only found as far north along the Atlantic coast as southern New England (Sturtevant 1981). The reason for this restricted distribution is very likely that the rapid rivers of the north, with their frequent long portages, were unsuitable for heavy dugouts. Nor were dugouts necessary for ocean travel to judge from the historic records of Micmac and Beothuk ocean-going birch bark canoes. As an implement inferred to be necessary for the manufacture of wooden dugouts, it is noted that gouge-like tools are absent from the tool kits of the West Coast and the southeastern United States and other areas where dugouts were historically important. The gouge is also distributed from the Labrador coast as far west as Minnesota and eastern Manitoba in riverine situations most inappropriate for heavy dugouts. Direct archaeological evidence of watercraft is rarely recovered. Site distributions, however, clearly indicate water crossings involving more than 150 km and "...attest to a high degree of maritime competency..." (Sanger 1995: 340). It is more than simply parsimony to assume that birch bark sheathed ocean-going canoes described by Europeans in the 16th and 17th centuries and in more recent times have had a long history in the Maritimes.

Subsistence:

Information on subsistence during Period IV is limited due to the lack of bone preservation at most sites. Even in the shell midden sites, where concentrations of shell have neutralized the normally acid soil, it is generally the post-AD 500 bone that survives. Minute charred and calcined fragments of bone are generally all that remain in the lower levels of sites. Under the circumstances, it is not surprising that settlement distributions, in conjunction with environmental considerations, have been heavily relied upon in the Maritimes to reconstruct subsistence patterns. Both of these approaches have limitations, and given the variability of resources along the coast, there is undoubtedly a very incomplete understanding of what foods were consumed and in what proportions during what time of the year. The broadly based and flexible subsistence pattern documented for the Micmac, for example, was seasonally punctuated by the focused exploitation of temporarily abundant resources such as spawning fish and likely represents a very old pattern (Burley 1983: 171). To further complicate the archaeologist's task, elements of this pattern, such as the gathering of fiddlehead fern sprouts on the flood plains, crabs and lobsters from the littoral, or squid from the sea, are all archaeologically invisible. The wide range of coastal, riverine, and interior resources in the Maritimes and adjacent regions (Spiess et al. 1983: 102) predicates a similar degree of variability in the subsistence rounds. In addition, biological food chains change through time in response to rising sea levels and altered environmental conditions and thereby change the carrying capacities of certain regions in terms of food. Allowing for regional fluctuations in the availability of certain resources, there appears to have been two major subsistence strategies. These consisted of winter to year-round coastal settlements harvesting littoral and marine resources and riverine summer camps exploiting a number of spawning fish species. The preceding subsistence strategies would have been contributed to by the hunting and trapping of land animals, birds and the gathering of plant foods. A matter of paramount importance for both coastal and interior settlement patterns would have been the storage of food for winter consumption.

Faunal remains from river sites are sparse due to acid soils. Even at the extensively excavated Mud Lake Stream site in southwestern New Brunswick (Deal 1986) only minute fragments of carbonized bone were recovered. What could be identified was mainly beaver and a single example of the extinct sea mink (*Mustela macrodon*) as well as salmon and char remains.

With reference to the coastal settlements, it has been suggested that the exploitation of shellfish and the accumulation of shell middens were relatively recent developments related to increasing coastal stabilization and the establishment of environmental conditions favourable to productive shellfish beds. While there does appear to be some increased exploitation of shellfish, the extent to which this accurately reflects a significant change from earlier practices is difficult to assess. The Middle Maritime culture people of Period III were also known to exploit shellfish (Bourque 1975; Byers 1979) but the overall importance and antiquity of shellfish gathering cannot be determined as the majority of the earlier coastal settlements have been destroyed by rising sea levels. Studies along the southern New England coast have suggested that during Period IV major changes in the various species of shellfish exploited reflect changes in methods of harvesting (Ritchie 1969; Snow 1972). Implicit to this view is the proposition that interior adapted people were forced by changing environmental conditions to focus their attention on the coastal littoral resources. Such a proposal has been challenged with the argument that a wide range of shellfish habitats were already being exploited by people who possessed a highly adaptive and flexible subsistence system (Braun 1974). There was likely some intensification of shellfish exploitation during Period IV but it was probably a perpetuation of an older pattern that has been obscured by coastal erosion. To talk about what might have been but what will likely never be know because the evidence has been largely destroyed by rising sea levels opens a person to criticism. The possibility of earlier intensive shellfish exploitation, however, must be at least considered when discussing the nature of subsistence practices in Period IV. It is not a coincidence that the decrease in coastal subsidence in the Passamaquoddy Bay region around 600 BC correlates with the appearance of many shell middens around the Bay. The preceding does not mean that there was not an increase in the exploitation of shellfish during Period IV along the coast but, rather, is intended to caution that the flexibility of the subsistence system reflected by the deer, moose, caribou, beaver, seal, and shellfish remains in the shell middens (Sanger 1985) does not necessarily herald a significant change in subsistence but could simply represent a continuation of an older subsistence strategy with shifting emphases as dictated by circumstances.

While the impact of rising sea levels and changing water temperatures on the habitats of various shellfish and other intertidal species that people depended upon are undoubtedly important factors, the dating of these events must also be critically evaluated. Studies on the rates of sea level rise, for example, are sometimes contradictory. Part of the problem appears to relate to the material that is dated as well as to the use of samples lacking good context or obtained from mixed deposits. Findings from a recent study of sea level changes in the Northumberland Strait between New Brunswick and Prince Edward Island correlate with estimates from the Bay of Fundy and the Atlantic coast of Nova Scotia suggesting the following: between 5,400 to 4,500 BP (4,250-3,250 BC) a slow relative sea level rise of 10 cm per 100 years; between 4,500 and 4,000 BP (3,250-2,500 BC) a very rapid rise of 1 m per 100 years; and between 4,000 and 2,000 BP (2,500-1 BC) a rate that decreases to the present 15 cm per 100 years (Scott et al. 1987). It is of note that all of the radiocarbon dates used in this particular study were derived from peat samples and not shell. Period IV was one of increasing coastal stability which would have resulted in a reduced impact upon the archaeological record. Even allowing for the variable nature of the relative sea level rises it can be appreciated that their destructive impact upon coastal sites, including the most recent sites, has been massive.

Another core subsistence focus relates to the summer fish camps along the major rivers and tributaries. Anadromous fish, mainly salmon, sturgeon, gaspereau or alewives, smelt including capelin, and shad, move up the rivers to spawn from spring to early summer. In addition, there would have been the fall catadromous eel run (Spiess et al. 1983: 104). On the Saint John River smelt and sturgeon would appear first in early spring followed by shad, striped bass, and gaspereau. In late May to June the main salmon run occurred with a possible fall run in September-October. The winter spawning tomcod would also have been important. Unlike the late summer/early fall salmon runs of the West Coast, the spring to summer runs of Atlantic fish likely made winter storage of dried fish more difficult. Such a limitation would have been at least partially overcome by the fall runs of butter-fat rich eels and the appearance of the winter spawning tomcod. Resources other than spawning fish, of course, were also exploited at these seasonally occupied fish camps. The very limited charred remains from the Fulton Island site, for example, consisted of muskrat, beaver, turtle, and butternut shells (Foulkes n.d.).

There is only limited evidence that Late Maritime culture people were intensive sea mammal hunters. The offshore site of Partridge Island (Bishop and Black 1988), an occupation associated with a shell midden that ranged from 500 BC to AD 500, produced the following: mainly cod, pollock, and some shellfish in the earliest occupation; cod, pollock and herring in the following occupation including an abundance of fish cranial parts suggestive of the processing of fish for later consumption; abundant shell, accounting for 50 to 90% of the matrix in the third occupation, consisting mainly of soft-shelled clam (*Mya arenaria*), horse mussel (*Modiolus modiolus*), common mussel (*Mytilus edulis*), and Atlantic dogwhelk (*Nucella lapillus*) as well as green sea urchin (*Strongylocentrotus droebackiensis*); and in the latest occupation there were pollock, haddock, herring, a number of equatic bird species, grey and harbour seal, moose, deer, dog, muskrat and beaver in addition to abundant shellfish. The presence of sea urchins points to a fall/winter occupation. Land mammals in conjunction with intertidal resources appear to have been the subsistence mainstays.

In summary, fish, intertidal resources, and large land mammals appear to have complemented one another to provide a diversified diet. The archaeological record provides no information on the importance of animals such as lobsters and squid whose remains do not survive in archaeological deposits. Such foods were undoubtedly of importance as suggested by the comments of early European observers. Similarly, archaeological evidence pertaining to plant materials has generally not been recovered from Late Maritime culture sites due, in large part, to the limited application of the flotation method to separate charred plant remains from archaeological deposits. An exception to the foregoing is the Mud Lake Stream site in southwestern New Brunswick (Deal 1986: 87). Among the plant materials recovered were the following: elderberry (*Sambucus canadensis*); raspberry/blackberry (*Rubus* sp.); partridge berry (*Mitchella repens*); pin cherry (*Prunus pennsylvanica*); bristly sarsaprilla (*Aralia hispida*); wild sarsaprilla (*Aralia nudicaulus*); and bulrush (*Scirpus* sp.). Bulrush is an edible plant and the use of sarsaprilla as a tea has been historically documented.

Settlement patterns:

How people distributed themselves along the coast must be viewed relative to geography and ecozones. It has been aptly noted that "It is this great variability, both in coastal morphology and in shoreline processes, within a relatively small geographical area that is the major characteristic of this region" (Owens and Bowen 1977: 28). In the Maritimes this exceptional degree of variability is a product of the southwestern-northeastern trending Appalachian bedrock and its relationship to local geological relief which interact in complex fashions with wave energy, tidal amplitude, and sedimentary processes. The erosion resistant rock of the exposed Atlantic coast of Nova Scotia contrasts with the softer rock of the often protected waters of the southern Gulf of St.Lawrence. Tides can range from 1 m to 16 m and coasts from straight fault-lines to complex, dendritic drowned lowlands. Shorelines vary from vertical cliffs to barrier islands to marshes and intertidal flats. It is perhaps not surprising that 22 distinct coastal environmental zones have been defined for the Maritime provinces (Owens and Bowen 1977). To further complicate this variable physical geography and its associated ecosystems has been rising sea levels or, more accurately, crustal downwarping which, in many instances, can change the habitat potential for various species. And, as species specific habitat productivity changed, so would the foraging strategies of people. There is much to recommend the advice that settlement and subsistence patterns be treated as "...area specific and based on Maritime microenvirons" (Turnbull and Allen 1988: 256). Despite the foregoing, the generalization can be made that the Late Maritime culture settlement patterns of the Maritimes and northern Maine can be assigned to two major categories; coastal and interior. These two settlement systems probably represent the seasonal responses of the same people to resource availability despite the evidence of regional coastal and interior populations in southern Maine (Petersen 1996). Little can be said concerning Late Maritime culture along the Gaspé coast as information is currently limited to the Ruisseau A site (Benmouyal 1987) whose occupation was likely determined by the local chert deposits.

Coastal sites tend to be sheltered from north and northwesterly winds, have access to fresh water and canoe landings, and are concentrated in particularly rich environmental locales such as estuaries and salt water lagoons. Inland sites are particularly common adjacent to fast water and water falls productive of seasonal anadromous fish and are found in lesser concentrations at river outlets and entries to lakes, points of land, and the confluences of rivers and streams (Sanger 1979; 1987; 1995: 343-344). The juncture of the Northwest Miramichi River and the Little Southwest Miramichi River in northeastern New Brunswick, where fresh and salt water meet, has the greatest concentration of archaeological sites found anywhere in the Maritime provinces (Allen 1991). Archaeological evidence of occupation of specific river drainages by a particular population (Snow 1980), as documented historically, has recently been challenged by evidence of winter and some probable year-round coastal occupations. This has raised the probability that the association of different bands with specific river systems is only characteristic of the period of European contact (Sanger 1986: 153). Similarly, recent research on Prince Edward Island (Keenlyside 1983) suggests that unlike the historically documented seasonal occupation, the Island was occupied in earlier times in the winter as well.

There has been an effort in the Maritimes to interpret archaeological evidence in relationship to environmental change. For example, evidence of changing coastal ecosystems between 3,750 BC and AD 1,000 is speculated to have forced people to remove themselves from the coast and adapt to the interior (Fladmark 1983: 73). On the southern New England coast, on the other hand, coastal stability during Woodland times, beginning sometime around 500 BC, has been used to argue for the gradual adaptation of interior peoples to the newly created coastal littoral resources (Dincauze 1975; Ritchie 1969). As a significant factor in both the development and demise of the various ecosystems, however, marine inundation and estuarine establishment along the coast appears to have been highly variable and locality specific. Thus, 'blanket' hypotheses relating ecosystem changes to environmental changes along the coasts of the Maritimes and the New England states are unlikely to be able to accommodate the highly complex suite of variables acting upon the area. This situation undoubtedly explains the frequent exceptions to each hypothesized generalization. Proposed major changes in subsistence between Middle Maritime culture and Susquehanna Archaic culture and subsequent cultures, for example, are to varying degrees contradicted by aspects of the settlement distributions and much of the subsistence evidence which indicates that these cultures occupied the same sites and often for the same reasons. Sites in Maine, such as Turner's Farm, Waterside, Taft's Point, and the Nevin Shellheap (Spiess 1985: 21) stand as examples of the foregoing. The most serious impediment to archaeological understanding in the region is undoubtedly related to rising sea levels. While changing environmental conditions impacted directly upon such critical factors as fish runs, shellfish habitats, etc. (Kerber 1985) it is cautioned that the regional variability of these environmental effects combined with pre-500 BC site destruction of much of the archaeological record by coastal erosion may very well confound any sweeping archaeological generalizations relating to subsistence and settlement patterns. An apparent increase in populations on the coast after 500 BC (Spiess et al. 1983: 99) may be misleading.

Despite the loss to coastal erosion of important segments of the archaeological record in the Maritimes it is suggested that the settlement patterns from at least Archaic times to the period of European contact were characterized by a flexible adaptation to both the coastal and the interior resources. Given the variety of foods available and the periodic nature of superabundances it is difficult to conceive how any human adaptation which was not flexible and capable of exploiting a wide range of resources would succeed. The settlement pattern evidence from 2,000 years ago to European contact reflects such a flexible system, based upon a wide range of terrestrial and marine resources (Sanger 1995). A seasonal round involving a coastal occupation from the fall through to spring followed by the exploitation of interior waterways during the summer (Bourque 1973; Sanger 1979: 109) involved, in both instances, base camps from which individual or small hunting and foraging expeditions could be launched. Much of the evidence for winter coastal settlement and possibly year-round coastal occupation by at least a portion of the population comes from southeastern New Brunswick (Sanger 1987). It has even been suggested that large coastal winter villages did not exist in the rest of the Maritimes (Tuck 1984: 73) but in this instance the word "large" needs to be defined. Shell midden sites occupied from Middle Maritime culture times on do occur in other parts of the Maritimes (Connally 1977) although their specific winter occupation has yet to be determined. None of these shell midden sites are large in the sense of representing a large aggregation of people at any one time and are more likely a product of "...a few families, returning on a seasonal basis" (Sanger 1986: 152). Thus sites represent the accumulated build-up of debris over a period of hundreds and even thousands of years. One piece of evidence which supports the view that the coastal shell midden sites included cold weather occupations is the concentration of debris inside house pits (Matthew 1884: 19; Sanger 1986: 150). Variability in patterns of settlement should be expected. For example, at the offshore Partridge Island site (Bishop and Black 1988) there was a shift between 500 BC and AD 500 from a summer-fall occupation to fall-winter-spring or year-round occupation. The possibility of separate, ethnically distinct, interior and coastal occupations in southern Maine has been suggested by significant coastal and interior differences in cordage twist and fabric construction characteristics as revealed by impressions on pottery (Petersen 1996). Implications of this finding for settlement and ethnicity in the Maritimes, however, cannot be assessed at this time.

A shallow, semisubterranean house pit in the Shubenacadie area of Nova Scotia containing the pseudo scallop shell, dentate stamped, and rocker impressed pottery of the northern pottery tradition and stemmed projectile points (Davis 1978: 17; Preston 1974) could date around 200 BC or earlier. Most pit houses, however, date later than AD 500. One of the house structures from the Sandy Point site in the Passamaquoddy Bay of southeastern New Brunswick dated to the end of Period IV (Wilmeth 1978) and consisted of a 4 by 3 m oval pit dug 65 cm into the ground with a sleeping bench situated around a sunken hearth area. Crushed shell ringed the margin of the structure (Sanger 1987). Such dwellings tend to occur towards the back of sites with debris being discarded between the house and the sea (Sanger 1986: 149) suggesting a seaward facing entrance. Another AD 500 pit house at the Partridge Island site (Bishop and Black 1988) measured 3 by 2.5 m and was 35 cm deep with stone ringing one side. Hearths and pits were also present. While cultural debris is concentrated inside such structures, suggesting cold weather occupations, no pattern of debris distribution on the floors has been discernible. Presumably due to the inherent difficulties of isolating components in shell midden sites and clearly demarcating houses early in the excavations it is often not possible to accurately associate cultural debris with specific houses.

The major interior sites tend to be situated in riverine locales where deep water passes close to the bank; areas which are favourable to the capture of migrating smelt, gaspereau, salmon, sturgeon, trout, and eel (Allen 1988; Preston 1974a). Such sites would provide a highly reliable food supply from early spring through summer and even in the winter if tomcod (*Microgadus tomcod*) was locally available. The stratified Oxbow (Allen 1981) and Fulton Island (Foulkes n.d.) sites on the Miramichi and Saint John rivers, respectively, with occupations spanning Periods IV andV, are good examples of seasonally occupied riverine locations. Both sites contained surface and pit hearths, pits, post moulds, and possible earth ovens (Foulkes n.d.: 59) associated with cultural debris including abundant fire fractured rock used in cooking. At the Oxbow site, in a level dated to AD 400, a 2.4 by 2.6 m ovate structure associated with two hearths was demarcated by post moulds (Allen 1980). Such a dwelling may indicate occupation of the site during the winter by at least a portion of the population. Also discovered at this site towards the end of Period IV were large storage pits measuring as much as 4 by 5 m and dug 2 m into the gravel terraces overlooking the habitation areas. It is inferred that such large storage pits were once roofed (Allen 1991).

The Mud Lake Stream site on the New Brunswick and Maine border is one of the few extensively excavated archaeological sites removed any distance from the coast. On the basis of the faunal and floral recoveries it was likely occupied from late summer through winter until early spring (Deal 1986), a conclusion which is at odds with the generally accepted view of interior occupation only in the summer. Late Maritime culture sites in the interior are usually situated near streams where they enter lakes.

At the Ruisseau A site on the Gaspé coast to the east of Sainte-Anne-des-Monts the majority of the finished tools came from an area regarded as a dwelling (Benmouyal 1987: Fig.33). The incompletely exposed structure is estimated to have measured from 6 to 7 m in diameter on the basis of some weight stones, post moulds, the concentration of debris, and a hearth. Approximately 4 m to the northeast of the dwelling was a stone tool workshop area and another activity area roughly the same distance to the east, the latter having a number of conjoined artifact fragments with those found in the dwelling.

Existence of an activity area was confirmed by plots of charcoal concentrations, fire cracked rock, bone fragments, and phosphate readings (Ibid: Figs. 34-37).

The tracing of exotic materials to geological source, such as flint and copper, in order to gain insights into relationships between people and regions is still in its infancy in the Maritimes. Certainly some Lake Superior native copper and Ohio Valley cherts and pipe stone found their way to the region with the spread of the Adena mortuary complex. Studies of more prosaic exotics are, however, quite limited. It has been noted that the Mt.Kineo felsite of Moosehead Lake in the western interior of Maine was a common material used for tool manufacture in the coastal shell middens of the state (Willoughby 1901) and approximately 50 percent of the chipped stone recovered from sites in Passamaquoddy Bay in southeastern New Brunswick was apparently brought into the region (Sanger 1986: 152). It is anticipated that river and coastal transportation routes played major roles in the movement of both people and goods into and throughout the Maritime region.

Cosmology:

The elaborate mortuary ceremonialism of Middle Maritime culture disappeared from the Maritimes and other areas of the Gulf of St.Lawrence and Maine sometime before 1,500 BC. Between the disappearance of this mortuary system and the first evidence of the Adena mortuary complex around 600 BC there is a very spotty archaeological record of mortuary ceremonialism. One of the few sites suggested to fill this gap in mortuary systems is the Sunny Corner site on the Miramichi River (Wintemberg 1937). While this accidentally discovered and largely destroyed burial site has been attributed to the Meadowood complex of Late Great Lakes-St.Lawrence culture, dating between 1,000 and 500 BC (Allen 1991: 17; Turnbull and Allen 1988), there are problems with such a cultural assignment. The evidence of human cremation is equivocal as is the evidence of polished slate gorget preforms. Only the finely made preforms or 'cache blades' resemble Meadowood mortuary offerings. The most diagnostic item recovered from the burials was a contracting stemmed point which would typologically place the burials in the Middle Maritime culture mortuary system of Period III (see Belcher et al. 1994). Further, if the Sunny Corner burial site is attributable to the Meadowood complex then it is preplexing why Meadowood materials are absent from the contemporary stratified levels of the nearby Oxbow habitation site. Another feature that has been attributed to Meadowood is a cremated dog burial associated with some Vinette 1 sherds at the Mud Lake Stream site in western New Brunswick on the Maine border (Deal 1986: 72). Neither cremation, human or dog, nor Vinette 1 pottery are unique to the Meadowood complex. Despite the statement that

Meadowood side-notched projectile points have been recovered from New Brunswick sites (Allen 1980; Deal 1985), no site containing the complete Meadowood assemblage of pottery and stone tools has been reported from the Maritimes. To date, the easternmost occurrence of the Meadowood complex as an integrated assemblage in Canada is the Lambert site on the south bank of the St.Lawrence River a short distance upriver from Québec City (Chretién 1993). Given the evidence of cultural continuity from Middle Maritime culture to Late Maritime culture it is assumed that after the waning of elaborate mortuary ceremonialism in Period III there was a period of around 1,000 years or more when such practices were discontinued and not revived until the appearance of the Adena mortuary complex, and even then only in a limited number of localities. Curiously, evidence is lacking of the distinctive mortuary system of the supposed Susquehanna Archaic invaders of southern New Brunswick.

Clearer evidence exists in the Maritimes for the presence of a mortuary complex referred to as Adena or Middlesex that entered the region prior to 500 BC. The duration of this mortuary ceremonialism was likely not much more than 500 years. Striking features of the Adena mortuary complex were its expansion out of a core area in the Ohio Valley and its maintenance of a series of prescribed burial practices which could include the construction of earthen burial mounds. As noted by James B. Griffin, "You are talking about the relationship of groups of people over 1500 years and 1500 miles north and south and a thousand miles east and west which had an actual validity. This didn't represent a cultural complex of any group of people in one locality" (Swartz 1970: 158-159). Grave offerings from even the most easterly occurrences of the Adena mortuary complex always include items originating from the Ohio Valley. Presumably such exotic objects reinforced the core area sanctity of the religious beliefs represented by the prescribed ceremonial practices.

The spread of the Adena mortuary complex has been attributed to either the migration of Ohio Valley populations (Ritchie and Dragoo 1959) or to diffusion related to trade (Griffin 1961). In the Maritimes the diffusion proposition would appear to be generally accepted (Rutherford 1990: 177) although some still adher to the migration hypothesis (Allen 1981: 143-144). A third possibility, and one that appears to better fit the available evidence, is that the Adena mortuary complex represented a formalized religion which was overseen by travelling priest-shamans. Such a possibility would help to explain the highly patterned nature of a mortuary complex that was adopted by numerous regional cultures in eastern North America. The fact that the Adena mortuary complex incorporated local elements of culture within the broader pattern reinforced its religiosity by adapting to some local requirements. Put another way, the symbolic significance of the Adena religion does not appear to be simply as a socially integrative ceremony concerned with the burying of selected individuals in order to reinforce the maintainance of formal relationships necessary to an extensive trading network. It is also pertinent that, while the mortuary complex has been said to have functioned as a system whose purpose was to reinforce a structured verification of trade relationships between groups, to date there has been little evidence of this trade except within the mortuary complex itself.

Although artifacts characteristic of the Adena mortuary complex, such as stone tube pipes and reel-shaped polished slate two hole gorgets, have over the years been accidentally discovered in a number of locales in Nova Scotia and New Brunswick it was not until 1972 that a relatively undisturbed site was brought to the attention of archaeologists (Turnbull 1976). At that time, Joseph Augustine of the Red Bank Indian Reserve dug into the centre of a mound which produced distinctive Adena mortuary materials. He had been shown the site 40 years earlier by his father who had informed him that the area was an important traditional dancing place. As the mound is situated in an isolated locale one third of a kilometre from the confluence of the Northern Miramichi River and the Little Southwest Miramichi River and is not conspicuous, it would appear that local Micmac knowledge of the existence of the mound reflects the maintenance of an oral tradition spanning nearly 2,500 years. The earthen burial mound of the Augustine site is 11.5 m in diameter and nearly 1 m high. Excavations revealed that the mound construction involved the removal of turf and the levelling of the mound floor followed by the excavation of 11 burial pits with the largest being centred in the mound floor. The pre-mound surface was then burned, mainly along its east side facing the rising sun. Scattered animal and fish bones were mixed with the charcoal and possibly represent food offerings. After the ritual burning of the mound floor, the bodies and grave offerings were placed in the grave pits which were filled and the mound then built over the whole (Turnbull 1976). It has been speculated that the central burial pit may have functioned as a charnal house as there appears to have been a depression over the central tomb. There were also some recent modifications in the form of levelling the top of the mound and extending the sides which may relate to later secondary ceremonial use by the local Micmac.

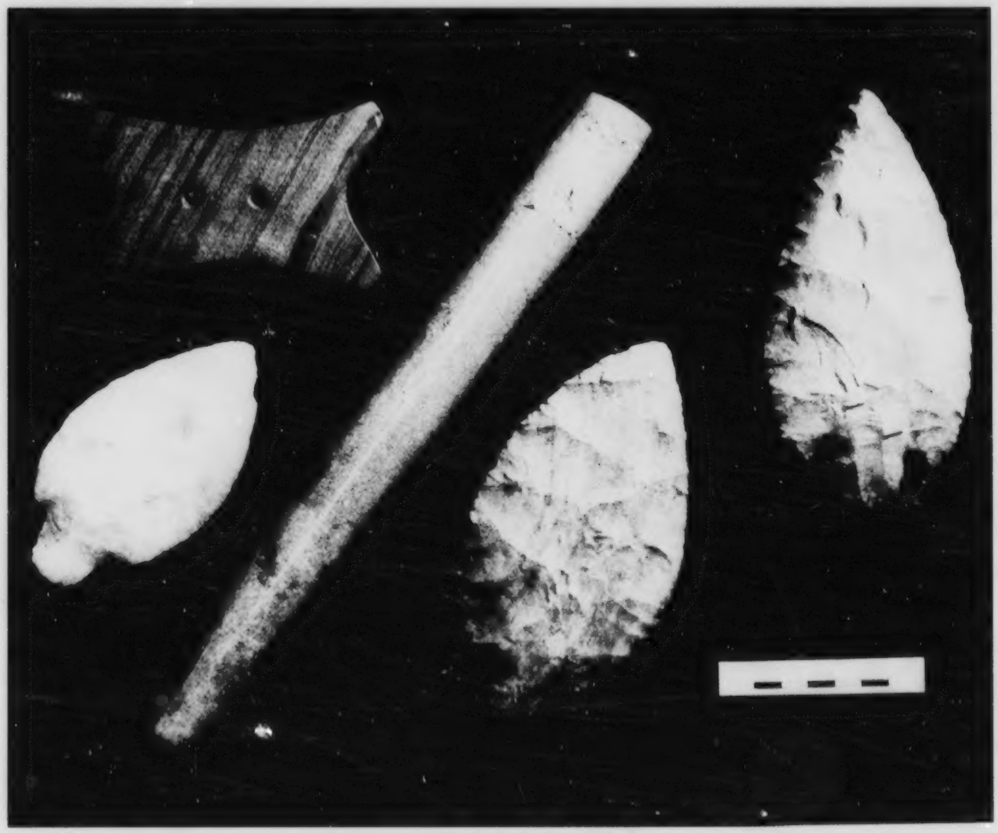
Some characteristics of the burial features are as follows: feature 10 consisted of three clusters of grave offerings surrounded by cremated bones and red ochre with the offerings consisting of chipped and ground stone celts, a skull, copper beads, carnivore mandibles and other animal bones, biface blades, ground slate gorgets, and other items such as fossils and naturally occurring odd shaped stones that probably functioned as amulets;feature 11 involved an adult and an infant bundle burial covered by birch bark and provided with biface blades, copper beads, and red ochre; feature 12 was represented by a bundle burial covered in birch bark and containing biface blades, copper beads, preserved plant fabrics, and red ochre; and feature 14 contained biface blades, scrapers, tubular stone pipes, a slate gorget, a chipped and ground stone celt, abraders, a pottery vessel decorated with a row of vertical impressions, shell pendants, a beaver incisor tool, textiles, a canine, and masses of copper beads on a rawhide thong. With reference to the pottery vessel, its paste characteristics and form are similar to a vessel from the nearby McKinlay burial site and also closely resembles a vessel from a lower level of the nearby Oxbow habitation site (Turnbull 1986: 19-21). Exotic items included among the grave offerings were large mortuary biface blades that appear to have been made from Ohio Valley chert, a tubular stone pipe manufactured from a distinctive fireclay found along the north bank of the Ohio River opposite the state of Kentucky, and native copper that would have originated from the Lake Superior region. The majority of the stone grave offerings, however, were of local manufacture but some mimicked Adena mortuary blade styles.

Wrapping of the deceased in birch bark was a frequent characteristic of the Adena mortuary complex. This was also a common practice across Canada and the northern United States where white or paper birch bark (*Betula papyrifera*) was available. According to Ojibwa tradition, the birch tree saved Winabojo (Nanabush, Minabozho, Nenabozho), the master and protector of both animal and plant life, from the mythical Thunderbirds and the tree was, therefore, blessed: "As long as the world stands this tree will be a protection and benefit to the human race. If they want to preserve anything they must wrap it in birch bark and it will not decay" (Densmore 1928: 384). In 1952, I witnessed the reburial of the remains of an early 19th century Ojibwa woman accidentally uncovered in a tent trench at the field camp of an archaeological crew on Manitoulin Island. During her reburial by the local Ojibwa community the ceremony was temporarily halted until birch bark was collected to wrap the bones as well as their wooden box container. It would appear that the preservative qualities and sacred nature of the birch may have a long symbolic association with the deceased in parts of eastern North America and elsewhere.

Materials from another Adena mortuary burial site located in the same general area as the Augustine mound were sent to England in 1908 and were eventually deposited in the Museum of Mankind in London (Turnbull 1986). Encountered during the excavation of a house foundation, the limited available information suggests that the McKinlay burial site contained two poorly preserved flexed burials that had been wrapped in birch bark and buried in a pit 0.8 m deep. The site overlooked a branch of the Miramichi River. Grave offerings included stemmed biface points, one manufactured from Ohio chert, scrapers, flaked and ground stone adzes, a diagnostic polished slate ceremonial object of unknown function called a 'boatstone' because of its shape, tubular smoking pipes of Ohio fireclay, ground slate gorgets, a pottery vessel with an incised triagular motif on the rim, copper beads, and some preserved textiles, animal hide, and

BLACK AND WHITE PLATE XXIII: THE AUGUSTINE BURIAL MOUND This Adena mortuary complex earthen burial mound situated in the Miramichi River drainage is in close proximity to major interior seasonal fishing sites such as the Oxbow site. The mound was discovered and reported to archaeologists by Mr. Joseph M. Augustine of the Red Bank Indian Band (Reproduced from Tuck 1984: Colour Plate VII).

leather thongs. One of the pipes still retained the blocking stone in the mouthpiece. Table 8 is adapted from Turnbull (1986: Fig.10) and compares the grave offerings recovered from the Augustine and the McKinlay sites. Even allowing for the incomplete nature of the McKinlay collection (Turnbull 1986: 9), the quantitative and qualitative similarities of the grave offerings from the two sites are striking. A determination of the mathematical degree of similarity between the contents of the two burial sites provided a high coefficient of similarity of 151.7 (Brainerd 1951). Under this formulae any two identical compared sites would have a coefficient of 200.0 while totally different compared sites would have coefficients of 0.0. The stemmed biface points, biface preform-knives, gorgets, boatstone, copper beads, flaked and ground stone celts, and tubular pipes follow a consistent Adena mortuary grave offering prescription. As the two burial sites occur in the same locale as the earlier Sunny Corner site it raises the



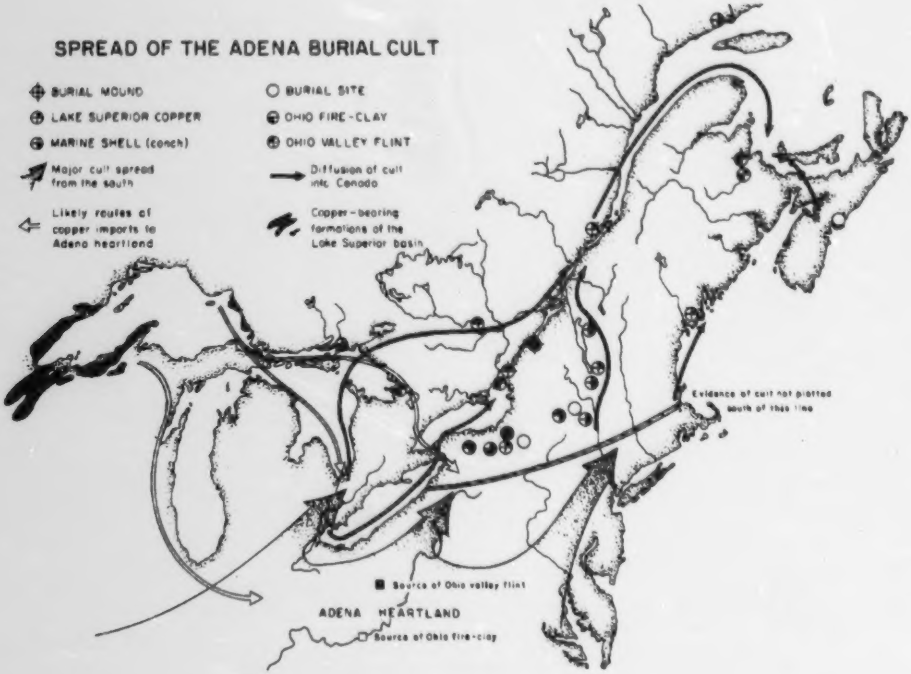
COLOUR PLATE XV: GRAVE OFFERINGS FROM THE AUGUSTINE BURIAL MOUND The polished slate two-holed gorget in the upper left corner is a characteristic Adena trait. In the centre of the photograph is a tubular pipe manufactured from a distinctive fire-clay found in Ohio. To the far right is a typical stemmed mortuary blade, possibly manufactured from Ohio chert. The two mortuary blade to either side of the tubular pipe were manufactured from local materials but were fashioned in forms that mimic typical Adena mortuary complex biface preforms/knives (Reproduced from Tuck 1984: Colour Plate VIII)

possibility that the region held a special sanctity for people for a considerable period of time.

Recently, an Adena mortuary complex burial mound dating between 600 and 300 BC, was encountered during construction work outside of Halifax, Nova Scotia. Fortunately, the small portion of the mound which escaped the heavy machinery was brought to the attention of archaeologists and some salvage work was possible. The Skora site contained a number of characteristic Adena mortuary complex items (Davis 1991; Steven A. Davis, St.Mary's University, Halifax: personal communication and examination). Finally, the Minister's Island site in Passamaquoddy Bay, New Brunswick contained some poorly preserved human remains probably representing eight adults and four immature individuals. Adena affinities have been attributed to some of the grave offerings placed with the bodies (Turnbull 1976), these consisting of large biface blades, chipped and ground stone adzes, copper beads, and textiles (Sanger 1987: 106). The bodies had been placed upon a layer of clean beach gravel brought to the midden.

Artifact Class	McKinlay		Augustine	
	f	%	f	%
Stemmed bifaces	4	10.8	27	23.7
Bifaces	18	48.7	53	46.5
Scrapers	2	5.4	8	7.0
Tubular pipes	4	10.8	4	3.5
Slate gorgets	2	5.4	4	3.5
Boatstone	1	2.7	-	-
Chipped and ground celts	5	13.5	6	5.3
Hammerstones	-		3	2.6
Abraders	-		6	5.3
Natural stones	-		2	1.8
Pottery vessel	1	2.7	1	0.9
Small copper beads	P		P	
Large copper beads	P		P	
Nugget copper beads	P		-	
Conical copper beads	-		P	
Red Ochre	-		P	
Totals	37	100.0	114	100.1

TABLE 8: FREQUENCY OF GRAVE OFFERINGS BY ARTIFACT CLASS FROM THE AUGUSTINE AND MCKINLAY SITES, MIRAMICHI RIVER, NEW BRUNSWICK Note: P = present but not quantified.


SPREAD OF THE ADENA BURIAL CULT
BURIAL MOUND
LAKE SUPERIOR COPPER
MARINE SHELL (conch)
Major cult spread from the south
Likely routes of copper imports to Adena heartland
BURIAL SITE
OHIO FIRE-CLAY
OHIO VALLEY FLINT
Diffusion of cult into Canada
Copper-bearing formations of the Lake Superior basin
Evidence of cult not plotted south of this line
Source of Ohio valley flint
ADENA HEARTLAND
Source of Ohio fire-clay

MAP V: EASTERN EXPANSION OF THE ADENA MORTUARY COMPLEX IN NORTHEASTERN NORTH AMERICA The map illustrates the geological sources of Lake Superior copper and the locations of Adena mortuary complex burial sites in the northern portion of northeastern North America. Also indicated is the occurrence of various exotic items as well as the probable routes of entry into Canada via the Great Lakes and the St.Lawrence River drainage. (Adapted from Plate 14 of the Historical Atlas of Canada, Volume I, Harris and Matthews 1987; Drawing by Mr.David W. Laverie).

The reasons underlying the adoption of the Adena religion by some segments of Late Maritime culture can only be surmised. Possibly it was an initial requirement to formalize trade agreements. What is clear is that the ceremonies only involved a small proportion of the population; presumably some form of elite with ascribed status to judge from the presence of children in the graves. It is assumed that the majority of people continued their established burial practices which have thus far eluded even accidental discovery. Certainly, if the deceased were placed in graves lacking offerings that could survive the passage of time and the normally acid soils there would be no physical evidence of their graves.

External relationships:

Little can be said concerning the external relationships of Late Maritime culture people other than to note that elements of some communities participated in the Adena mortuary complex along with other contemporary cultures in Québec, Ontario and the adjacent northern states. Influences were also received in the form of early pottery styles from the upper St.Lawrence River region via the Gulf of St.Lawrence and probably down the Saint John River. It is important to heed that the processes involved in pottery style diffusion and modification "...transcend local contexts and culture history and correspondingly, their better definition may profit the broader study of material culture in anthropology" (Petersen and Sanger 1991: 160). What appears to be a Middle Palaeo-Eskimo culture (Groswater complex) projectile point was found at the Ruisseau B site on the Gaspé coast (Benmouyal 1987: Planche 55, fig.a). This small, double side-notched trianguloid point with basal and lateral grinding and a base thinned by "...des enlèvements lamellaires sur une face et une courte retouche marginelle sur l'autre" (Ibid: 264) matches Groswater complex point attributes and would likely pertain to the contemporary Ruisseau A site on the next lower terrace.

Until there is an increased effort to finger-print various materials in the Maritimes to their geological sources the relationship of Late Maritime culture to its neighbours will remain poorly known. Most such relationships have been based upon typological considerations, particularly as they pertain to projectile point styles. Given the potentially subjective nature of many archaeological point typologies, such relationships should be treated with caution in the absence of other supporting evidence. There are few indications of significant influences from the north across the Gulf of St.Lawrence, from the south along the Atlantic coast, or from the west across the Appalachian highlands of the New England states. Most influences appear to have emanated from the St.Lawrence River Valley.

Human biology:

The scarcity of skeletal remains that can be attributed to Late Maritime culture limits observations on human biology. Materials from the Adena mortuary complex sites are simply too incomplete to provide much information. A female burial from the Bear River site in Nova Scotia represents the only relatively complete adult skeleton from the province (Erickson 1978). Unfortunately, due to poor excavation technique (Connolly 1977), the cultural context of the burial within this multi-component site is uncertain.

It is unlikely that human skeletal samples from Period IV or any other period in the Maritimes or the southern Gulf of St.Lawrence will be recovered that can throw light on the human biology of the pre-European populations. Burials, for example, are rarely found in shell middens with their neutralizing effect upon the normally acid soils. If people were buried in the back part of sites away from the shell deposits then skeletal remains would not likely survive (Sanger 1986: 151).

Inferences on society:

Information is too limited to provide much comment on the nature of society other than to suggest that nuclear families were probably organized into local bands and that the local bands undoubtedly would have interacted with one another for purposes of exchanging goods and arranging for marriage partners. Archaeology provides no evidence of social structure differentiation with the exception of the individuals involved in the Adena mortuary complex. Even here the reasons for placing some people in such elaborate structures as burial mounds were undoubtedly complex and cannot simply be treated by itself as evidence of some form of social stratification within the society. The presence of the remains of children does suggest that some form of ascribed rather than achieved status was involved. It is inferred that seasonal rounds centred on the winter and summer base camps exploiting coastal foods and interior riverine anadromous fish,respectively, as well as the resources surrounding the base camps. Such rounds would have favoured nuclear families organized into local band structures with close relationships with neighbouring bands. The dimensions of the pit houses in Period IV clearly suggest occupation by single nuclear families (Sanger 1986: 50). If one accepts the point of view that scrapers were a woman's tool then the observation that "Pour la première fois aussi, de la quartzite à grains fins et de la calcédoine - matériaux dont l'origine est inconnue - sont introduites et utilisées surtout pour les grattoirs" (Benmouyal 1987: 368) may suggest some degree of patrilocal residence where a wife would leave her own band to dwell with her husband's people. In a recent consideration of the quite different cultural developments on the west and east coasts during Period IV and Period V, both with abundant marine resources, an important point was that "Resource richness may have supported a strong marine focus but it need not have spawned any particular form of social organization" (Sanger 1995: 335).

As noted above, the only suggestion of possible status differentiation in Late Maritime culture is found in its involvement with the Adena mortuary complex. It is likely that only an elite group of families were provided with all of the accoutrements of the elaborate burial ceremonialism. If it were otherwise, one would expect many more accidental discoveries of such burials given the fact that they are generally richly provided with grave offerings that survive the passage of time. Indeed, in addition to the stone and pottery items, the ubiquitous occurrence of large quantities of copper beads frequently results in the preservation of organic materials due to the antiseptic effect of the copper oxides. Such oxides inhibit the breakdown of organic materials by the normal processes of putrefaction. Special funeral treatment of the members of certain families, however, is unlikely to mean that the societies involved were trending towards some form of ascribed or inherited social status involving social stratification where, for example, commoners would be clearly distinguished from nobles. It is more likely that the people who were buried according to the prescribed Adena mortuary complex requirements were the individuals and their close kinsmen who were direct practitioners in the cult such as shaman-priests. Certainly there is no evidence of social stratification apparent in the other culture systems of Late Maritime culture although wise elders, great hunters, healers, and other people who were valued because of their accomplishments would have been recognized within the still essentially egalitarian societies.

Possibly pertinent to **Inferences on society** is recent research in southern Maine on the distribution of cordage twist and fabric structure types throughout Period IV which suggests a significant technological differences between coastal and interior populations. Rather than these populations representing the seasonal rounds of a single population sharing a common cultural pattern they may represent different macrobands occupying distinct coastal and interior environments (Petersen 1996: 115). The implications of this important discovery regarding the band composition of Late Maritime culture in Canada cannot be determined since, unlike the southern regions of Maine, the earlier segment of the northern pottery tradition is characterized by plain and dentate stamp impressed vessels rather than fabric or cord-wrapped stick impressed vessels. This situation highlights the problem of certain elements of technology, such as projectile points and harpoons, being more characteristic of widely distributed horizon styles while other elements, such as textiles, more accurately reflect their local ethnic roots.

Limitations in the evidence:

Throughout this chapter the destruction of the archaeological record by coastal erosion and submergence beneath the sea has been emphasized. No consideration of pre-European cultural developments in the Maritime provinces can ignore how much of the archaeological record is either missing or drastically reduced by natural forces. In contrast, archaeological sites along the Gaspé coast have been isolated on elevated strandlines above the St.Lawrence River and the Gulf. With reference to the Maritimes, however, it is a truism that "Coastal land loss must be treated seriously in any Maritime

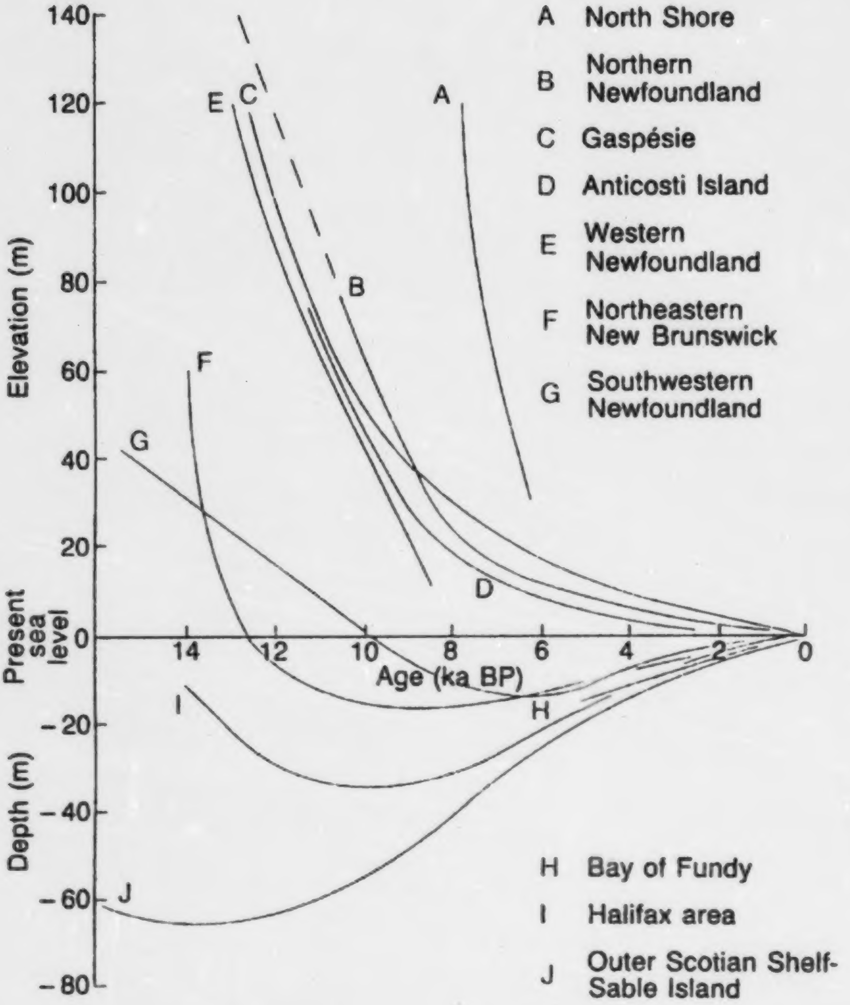


FIGURE 58: SEA LEVEL FLUCTUATIONS SEEN THROUGH TIME FROM THE GULF OF ST.LAWRENCE TO THE MARITIME PROVINCES Variations in sea level above and below present sea level are given in metres on the vertical axis to the left. The time scale is calibrated in 1,000 BP radiocarbon time units (ka BP) along the horizontal axis which also represents present sea level. Geographical areas running from A to J are arranged from north to south. It can be seen that archaeological sites in the Gulf of St.Lawrence and most of the Island of Newfoundland have been elevated through time above present sea level while coastal sites to the south have been inundated. (Reproduced courtesy of the Geological Survey of Canada from Quaternary Geology of Canada and Greenland, 1989, Douglas R. Grant, Figure 5.16)

distributional study. In the Bay of Fundy we have lost approximately 40 vertical metres over the past 7,000 years" (Turnbull and Allen 1988: 254). Destruction by coastal erosion has undoubtedly removed a large segment of the archaeological record (Grant 1970; Simonsen 1978) and complicated the interpretation of what has survived. The situation has been exacerbated by farming, the concentrated development of arable land (Preston 1974a), and the damming of interior waterways for lumbering and hydro-electric power (Hale 1986). In Maine, as well, the period between 1,750 and 500 BC is very poorly known (Spiess et al. 1983: 99) and, thus, there are reduced opportunities to extrapolate from neighbouring archaeological findings. Period IV coastal sites have, for the most part, been eradicated (Allen 1980: i). Little archaeological evidence earlier than 500 BC has survived on Prince Edward Island (Keenlyside 1983: 6). And, exclusive of the shell midden sites, the acid soils of the region have destroyed all bone materials. It will be necessary to increasingly focus upon the large stratified river sites of the interior and the tidal estuaries in order to gain a greater understanding of the archaeological history of the Maritime provinces during this and earlier time periods. The better preserved coastal sites of Period V do permit some insights regarding what likely pertained to Period IV, particularly along the Maine coast (Sanger 1995: 342).

While the destruction of archaelogical sites along the coast has been emphasized, there has also been massive destruction of sites in the interior. It is estimated that most large sites along the St. Croix River drainage have been destroyed through erosion resulting from the numerous dams erected for floating logs to the sawmills (Deal 1986: 88).

A final limitation in the archaeological record of the Maritime provinces is the paucity of publications. Few journal or manuscript publications exist and those that do are not widely distributed. New Brunswick is clearly ahead of Nova Scotia and Prince Edward Island in its publication record; particularly through its Manuscripts in Archaeology series. There is still a large body of local information, well known to provincial archaeologists, that is not readily available to outsiders. As an example of the problem, unpublished archaeological papers cited in a recent article (Deal 1986) represented more than 25% of the total archaeological references in the bibliography.

CHAPTER 23

LATE GREAT LAKES-ST. LAWRENCE CULTURE

Précis:

Late Great Lakes-St.Lawrence culture is composed of three complexes called Meadowood, Saugeen, and Point Peninsula. As used in this work, the word 'complex' can have a number of shades of meaning. In Volume I it was used to describe certain archaeological entities that lacked sufficient information to be classified as cultures. In all of the volumes, the term is also used to describe early to late sequential phases of a single cultural development such as the Pelican Lake (early) and Besant (late) complexes of Late Plains culture as well as complexes that are contemporary but geographically discrete entities within a single culture such as the present instance. The term 'complex' can also be used to describe a particular archaeological phenomena that cross-cuts a number of different cultures, such as the Adena mortuary complex. Thus, the intended meaning of the word changes with the context within which it is used. Such looseness in contextual meaning may be irritating to some but it does suite the ever changing nature of archaeological information and avoids implications of preciseness where preciseness does not exist. The definition of a culture as an entity composed of a number complexes of temporal, spatial, or phenomenon character is appropriate to the intent of this work. Temporal and spatial complexes, however, are composed of a number of independent societies and phenomena complexes may influence some societies within a culture but not others.

All three complexes of Late Great Lakes-St.Lawrence culture fall into what is commonly referred to as the Early and Middle Woodland or Initial Woodland period spanning 1,000 BC to AD 500. The word 'Woodland' identifies the appearance of a single new item of technology - pottery, and for classificatory convenience brings the pre-pottery Archaic period to an end. The territory occupied by Late Great Lakes-St.Lawrence culture was the Lower Great Lakes, the eastern part of the Lake Huron basin, the St. Lawrence River to Québec City, the western portion of the Eastern Townships of Québec, northern New York and Vermont. A number of factors have complicated the process of attempting a synthesis of the archaeology of this region during Period IV. While the territory was mainly covered by the Great Lakes-St.Lawrence Forest vegetation province, its southern and northern margins were occupied by the Deciduous Forest and the Boreal Forest vegetation provinces, respectively. These different vegetation provinces were, in large part, home to different archaeological cultures which interacted with their neighbours in complex ways. Archaeological reports have tended to be regionally focused with the archaeological record being presented as seen from Ontario, Québec, Vermont, New York or, more often, from even smaller regions within the preceding provinces and states. This regional focus has been further exacerbated by a lack of agreement on classification systems including even general terms like 'Early Woodland'. Archaeological sites are typically composed of multiple occupations spanning thousands of years that are difficult or impossible to isolate into individual occupations. This has led to a heavy reliance upon cultural 'diagnostics' to interpret the archaeological record. Finally, the elaborate mortuary ceremonialism that characterizes Period IV has tended to be over-emphasized in the reconstruction of the culture history. Despite the foregoing problems, the archaeology of the region is one of the richest in the country. It is the abundance of archaeological evidence from an environmentally and archaeologically complex region that is largely responsible for the unusual length of this Chapter.

There is a consensus that Late Great Lakes-St.Lawrence culture developed out of a late Archaic cultural base, Middle Great Lakes-St.Lawrence culture, although there is considerable disagreement regarding how this actually came about. The difficulties involved in tracing developments within Middle Great Lakes-St.Lawrence culture towards the end of Period III were considered in Volume I. In Chapter 15 of Volume I, the reasons for favouring a Middle Great Lakes-St.Lawrence culture (LaurentianArchaic) ancestry for the culture currently under consideration were outlined. There is some agreement that Late Great Lakes-St.Lawrence culture gave rise to the historically documented Iroquoian-speaking peoples of northeastern North America with the probability that some adjacent Algonquian-speakers also shared in this development.

It was once believed that with the appearance of pottery vessels and the genesis of the 'Early Woodland' a major cultural developmental stage was achieved. The appearance of pottery vessels, burial mounds, and more elaborate technologies were regarded as evidence of a change from a hunting, fishing, and gathering economy to a horticultural one. It is now apparent that, though the use of plants intensified with time, the food economy was still based upon hunting and gathering. The foregoing observation does not belittle the fact that by 500 BC squash was being grown on sites in adjacent Michigan and Ohio suggesting that this tropical cultigen was likely being grown in Southern Ontario as well. Indeed, squash could well have been grown much earlier as indicated by squash rind dated to 4,000 BC from a site in Maine (Petersen 1991: 140-143).

In addition to the introduction of pottery from the south, three other important events characterize Period IV. Sometime around the beginning of Period IV the bow and arrow weapon system was widely adopted and eventually replaced the earlier spearthrower. At the same time entrepreneurial bands in control of the high quality western Onondaga chert deposits between Lake Ontario and Lake Erie in Ontario and New York developed a sophisticated production system of specialized chipped preforms. These preforms were widely traded throughout northeastern North America between 1,000 and 500 BC. Underlying the development of this unusual commercial enterprise was likely the need for a more precise type of weapon tip for the new bow and arrow weapon system. The fact that western Onondaga chert was mainly used in the production of the preforms would also suggest that some form of symbolic significance was attached to the material. Shortly following the foregoing events was the appearance of Ohio Valley mortuary ceremonialism that would exert an influence in the region for approximately 1,000 years.

Pottery vessels have been particularly valuable to archaeological interpretations. Pottery involves a plastic medium that preserves a range of cultural values as expressed in the form of motifs, decorative techniques, vessel form, and other attributes. Any modifications to the clay when in a plastic form are transformed into an imperishable stone-like hardness after firing. The detailed characteristics incorporated in pottery manufacture and decoration represent exceptionally sensitive indicators of trends and relationships through both time and space. While pottery is of considerable importance to archaeological interpretations throughout Period IV, it has also been the basis of some interpretational problems. It was initially assumed, and still is by most researchers, that 'Early Woodland' pottery is always represented by a particular variety of cord impressed pottery that preceded and was, in all instances, ancestral to 'Middle Woodland' pottery with its elaborate dentate impressed designs (Ferris and Spence 1995; Ritchie 1946; Ritchie and MacNeish 1949). The assumption of a chronological sequence of early cord impressed pottery followed by dentate stamped pottery has been particularly troublesome for the Canadian portion of the region under consideration as a number of dated 'Middle Woodland' sites have turned out to be contemporary with 'Early Woodland'. Further, the early corded pottery, which does represent one of the earliest pottery styles to be found across much of northeastern North America, is either peripheral to Canada or is generally found in association with 'Middle Woodland' pottery styles. The only habitation sites known to date in Canada that predominantly contain the early corded pottery and the equally distinctive chipped stone tool kit are the Batiscan and Lambert sites on the St.Lawrence River near Trois-Rivières (Levesque et al. 1964) and Québec City (Chrétien 1993), respectively. Similar habitation sites will likely be discovered in the Niagara Peninsula region between Lake Ontario and Lake Erie (Noble 1975) and along the northshore of Lake Erie (Spence et al. 1990). Whereas the earliest pottery from stratified sites on the New York side of Lake Ontario invariably are a cord impressed style called Vinette 1 (Ritchie 1944; Ritchie and MacNeish 1949) on the Ontario side of the Lake the earliest pottery from equivalent stratified sites is the quite different dentate stamped pottery (Ritchie 1949). If there is a chronological sequence of early cord impressed pottery leading into early dentate stamped pottery in the Canadian portion of the region under consideration then both the visibility of the evidence and the nature of the radiocarbon dates have been, indeed, perverse. At this point in time it would appear that when the local Archaic populations in most of eastern Canada adopted the idea of pottery from the south they proceeded to invent the 'Middle Woodland' decorative styles rather than simply replicating the corded pottery of their neighbours to the south and east. The heartland for the distinctive dentate stamped pottery style was likely in Southern Ontario and probably the extreme upper St.Lawrence River in Québec. From this area the northern pottery eventually diffused to the east, west and south. As people do not live in a vacuum, the two different pottery styles, cord impressed to the south and east and dentate stamped to the north and west, are frequently found associated on the same sites. Often, the people adopting one or the other of the two different pottery styles shared an otherwise common ancestry. With the exception of the specialized Meadowood complex chipped preforms and their finished tool derivatives, most of the non-pottery elements of the technology, settlement and subsistence patterns, as well as the mortuary systems, were shared by people who simply made different styles of pottery. While pot sherds are common on sites of this period and more readily lend themselves to classification than most other items of the technology, they have perhaps been too heavily relied upon in the reconstruction of the culture history. In this respect, while the Meadowood complex did develop out of the preceding Archaic and into the subsequent Point Peninsula complex (Tuck 1978: 4), it did this mainly in New York State, a limited portion of the St.Lawrence River between Trois-Rivières and Québec City, and probably Lake Champlain. Throughout most of Southern Ontario and immediately adjacent Québec, the development from Middle Great Lakes-St.Lawrence culture proceeded directly to the Point Peninsula and Saugeen regional complexes without an intervening Meadowood or Early Woodland presence. The geographic relationship between these two early pottery styles and their partial contemporaneity continues to cause considerable debate (Ferris and Spence 1995; Fitting 1978: 50; Mason 1981: 271; Wright 1990: 495-496). Given the limited and often equivocal nature of the evidence, it is inadvisable to be too dogmatic, at this time, with regard to either the validity of the traditional lineal development of pottery styles from Early Woodland to Middle Woodland or a bimodal origin involving two distinctly different pottery traditions.

The earliest burial ceremonialism in Period IV, dating between 1,000 and 400 BC, is referred to as the Meadowood mortuary complex and in Canada appears to be largely restricted to the St.Lawrence River Valley in Québec and the northshore of Lake Erie in Southern Ontario. With antecedents in the mortuary practices of Middle Great Lakes-St.Lawrence culture, the Meadowood mortuary complex also shared many burial traits with the early Point Peninsula and Saugeen complexes with whom it was partially contemporary. A somewhat later mortuary complex, dating from 800 BC to AD 100, is called the Adena mortuary complex or, more commonly, the Middlesex complex (Spence et al. 1990). Unlike the Meadowood mortuary complex, the Adena mortuary complex was a product of influences emanating from the Ohio Valley that included earthen burial mounds and exotic Ohio Valley grave offerings. It was followed by the related Hopewell mortuary complex, also from the Ohio Valley, that disappeared just prior to the end of Period IV. Late Great Lakes-St.Lawrence culture people practised an amalgam of Ohio Valley mortuary ceremonialism and local core belief systems derived from Period III. All of these various mortuary practices not only overlapped, to varying degrees in both time and defining characteristics, but they only flourished in certain geographically limited areas. This suggests that, while earlier mortuary ceremonialism underlaid all of the mortuary complexes of Period IV, specific regions participated more intensely in the ritual practises coming from the Ohio Valley.

Like their Middle Great Lakes-St.Lawrence culture ancestors, the Late Great Lakes-St.Lawrence culture people were organized into local bands which, during the warmer months of the year, coalesced at favourable fishing locales. Here the women, children, and the infirm could be left to tend fishnets and traps and gather shellfish and plant foods while the hunters ranged out from the base camp along the water routes in search of big game and other resources. An apparent innovation in the Saugeen complex was the ability to trap fish in rapids, likely using weirs to channel fish into the trap/net. Weir fishing in quieter water, of course, was practised much earlier. Archaeological evidence of human relationships are to be seen in the presence of alien pottery styles on many sites reflecting the need to draw spouses from other bands and even other cultures. With reference to the foregoing, it is believed that women manufactured the pottery vessels and brought their regional styles with them when they joined their husbands.

In summary, the appearance of pottery around 1,000 BC, the adoption of the bow and arrow about the same time and the development of a specialized preform industry, and the appearance of mortuary ceremonialism originating in the Ohio Valley, coalesced to create an impression in the archaeological record that momentous change took place. It now appears that simply two new elements of technology, pottery and the bow and arrow, were adopted. Even the mortuary ideas coming from the Ohio Valley were only adopted by a very limited portion of the population. The way of life remained essentially unchanged from Period III and was not dramatically altered until the adoption of a corn-based horticulture economy between AD 500-1000.

Cultural origins and descendants:

There is agreement across much of northeastern North America that the various Woodland regional cultures and complexes developed directly out of the local terminal Archaic cultures (Dragoo 1976: 16; Fitting 1970; Johnston 1968: 40; Mason 1981: 209, Ritchie 1949: 17-19; 1965: 210; Snow 1977; Spence and Fox 1986: 39; Tuck 1977; Wright 1972a: 57; 1984; Wright and Anderson 1963). There are archaeologists, however, who regard the evidence for some of the transitions from Archaic to Woodland as being too equivocal to exclude the possibility of migration as an explanatory device (Clermont 1978a: 40-41). Despite a widely held consensus regarding cultural continuity, there is considerable disagreement relating to the nature of the ancestral Archaic culture or cultures in the region under consideration. Some would argue for a Middle Great Lakes-St.Lawrence culture (Laurentian Archaic) ancestry (Tuck 1977; Wright 1984) while others (Clermont 1990: 8 & 16; Snow 1977; Spence and Fox 1986: Fig. 1.2) would favour a Susquehanna Archaic-related ancestry. Regardless of these differences of opinion, the evidence of a transition from Terminal Archaic into the Meadowood, Point Peninsula, and Saugeen complexes consists of quite specific technological, subsistence, settlement pattern, and mortuary traits. The issue is not whether a transition took place but, rather, what cultural identifications are being applied to the terminal Archaic societies involved in the transition. Given the equivocal nature of the knowledge pertaining to the transitional period it is appropriate to use a broad cultural construct, like Middle Great Lakes-St.Lawrence culture, rather than relying upon constructs based upon materials generally lacking good archaeological contexts to generate such vague concepts as 'Broad Point' and 'Small Point' cultures. Within this Middle Great Lakes-St.Lawrence culture, however, there are geographical differences which are maintained into the Meadowood, Saugeen and Point Peninsula regional complexes. For example, the Niagara Escarpment in Southern Ontario appears to have acted as a frontier between cultural developments to the east and west throughout most of archaeological history (Wright 1962; 1990).

Much of the archaeological disagreement surrounding the transition from Archaic to Woodland (1,500 to 1,000 BC), as well as other issues, is a product of equivocal evidence resulting from the scarcity of single component sites. Matters have been further complicated by sudden changes in the archaeological record stemming from the introduction of a number of major innovations such as pottery vessels and the bow and arrow. There was also an elaboration of mortuary practices and increasing contacts with neighbouring cultures. Due to its strategic location along a major waterway the Lower Great Lakes and Upper St.Lawrence regions appear to have been subjected to influences coming from all directions (Wright 1984: 293-297). As if conspiring to further confound archaeologists, people in the region did not simply adopt new ideas from outside but transformed them into distinctive entities appropriate to their particular needs. The combination of direct diffusion and stimulus diffusion produced a very complex archaeological record. Contrary to an earlier suggestion (Wright 1984), climatic change does not appear to have been a major factor in these cultural changes.

Settlement patterns and, thus, presumably subsistence patterns, remained essentially unchanged from Archaic into Woodland times. A suggested shift to a greater reliance upon fishing and/or plant foods by 1,000 BC (Ritchie and Funk 1973) appears to be more a change of degree rather than kind. Like the settlement and subsistence patterns, the mortuary practices of certainly the Meadowood and early Point Peninsula complexes reflect Middle Great Lakes-St.Lawrence cultural roots as represented in the Glacial Kame mortuary complex (Donaldson and Wortner 1995). With reference to technology, there is a direct association of Middle Great Lakes-St.Lawrence culture point styles and other traits with Meadowood complex materials at sites such as Batiscan in Québec (Levesque et al. 1964) and the Scaccia (Funk 1973) and Muskalonge Lake sites (Ritchie 1955) in western and northern New York, respectively. While theArchaic traits identified at the Scaccia site could be due to component mixture (Dr. Robert E. Funk, former State Archaeologist of New York State: personal communication), such cultural contamination is unlikely at the Batiscan site where, in addition to isostatic rebound isolating the site 1.6 km back from the St.Lawrence River, the cultural deposits were capped by a thick layer of sterile sediments (Levesque et al. 1964: 17-23). The materials from the Muskalonge Lake site were in direct association in graves. Part of the problem in interpreting events has been the heavy reliance placed upon the early Vinette 1 cord impressed pottery and the specialized chipped preform technology in western Onondaga chert and their derivatives to define the Meadowood complex . If the foregoing categories are excluded temporarily from consideration much of the remaining technology clearly reflects its Middle Great Lakes-St.Lawrence cultural roots.

Cultural continuity persists from the Woodland complexes of the region to the Iroquoian-speaking peoples encountered by Europeans in the 16th and 17th centuries. Separation of the Meadowood and early Point Peninsula complexes is largely based upon changes in pottery styles. There are many continuities in both the stone and bone tool assemblages (Ritchie 1965: 205). The major features which distinguish the Iroquoian-speaking peoples from their Woodland ancestors was their adoption of a horticultural economy with its different settlement pattern requirements, and a marked change in burial practices. The nature of the interrelationships between the Meadowood, Saugeen, and Point Peninsula complexes, however, are not simple and will be considered in the section treating **Technology**. Briefly, the Meadowood complex appears to have been peripheral to Southern Ontario with its strongest representation appearing in the St.Lawrence River Valley above Québec City and in northern and western New York.

The Saugeen and Point Peninsula complexes in Ontario and the upper St.Lawrence River drainage in Québec were, for the most part, contemporary with the Meadowood complex. This is evident in the direct association of distinctive elements of the various complexes as well as radiocarbon dates. It is suggested that when the idea of pottery moved northward from the southeastern United States around 1,500 BC, people on the southern margins of Canada and a portion of the St.Lawrence River adopted a distinctive style of beaker-shaped vessels covered with cord impressions. This innovation appears to have been a product of stimulus diffusion (e.g. accepting an innovation but modifying its form to accommodate local needs). Further to the north in most of Southern Ontario and adjacent Québec stimulus diffusion took a different direction and resulted in a quite different pottery style. In this case, the conoidal based vessels were decorated with toothed pottery decorating implements applied to carefully smoothed surfaces. It was earlier assumed, and is still maintained by most archaeologists, that the cord impressed pottery style always preceded the development of the dentate impressed pottery and, indeed, gave rise to it. The debate thus comes down to determining whether the two different pottery styles were sequential, contemporary, or partially overlapped one another in time. Early radiocarbon dates from Point Peninsula and Saugeen sites in Ontario, the scarcity and marginal nature of Meadowood complex habitation sites in Ontario despite a presumed 500 year period of occupation and, the scarcity of very early Point Peninsula sites in New York State, all suggest that there were two different pottery traditions, one to the south and the other largely in adjacent Canada. All three regional complexes shared a common ancestry and interacted with one another with the result that the two pottery styles are not infrequently found together on the same sites. It has been necessary to discuss in some detail the relationship between the two pottery traditions, or what some would call horizon styles (Petersen and Sanger 1991), as pottery stylistic characteristics and trends have been used extensively to classify populations into different cultures. This is done despite the fact that the remaining technology and other cultural systems suggest related populations were involved. It appears that the Meadowood complex was transformed into Point Peninsula in New York State by adopting the distinctive northern pottery style and, in part, abandoning their earlier pottery style as well as the specialized Onondaga chert preforms and their byproducts. Even here, however, different varieties of cord impressed pottery continues to be popular in New York unlike most contemporary sites in Ontario and Québec. If pottery had not been introduced into this region of eastern North America there would be considerable difficulty involved in separating the three complexes from one another except for the intriguing chipped stone preform technology to first appear in the Meadowood complex. Unfortunately, much of the technological purity attributed to the Meadowood complex stems directly from the unacceptable practice of isolating certain artifacts like the Vinette 1 pottery, the distinctive Meadowood side-notched points, the specialized preform byproducts, and western Onondaga chert, from the mixed deposits of multi-component sites (Clermont et Chapdelaine 1982). In sites with a limited degree of component mixture the Meadowood complex assemblage is far more heterogeneous (e.g. Chrétien 1993; Levesque et al. 1964). Thus the attributed technological discontinuities between Terminal Archaic and Meadowood and Point Peninsula are likely a product of archaeological methods attempting to analyze materials from sites lacking clear component contexts. As a result we have the perplexing situation whereby "Nous n'arrivons pas encore à savoir si ces influences étaient liées à ;l'absorption de familles imigrantes, au développement de contacts culturels privilégiés ou à la diffusion d'idées..." (Clermont 1995: 72).

With reference to the Saugeen and Point Peninsula complexes in Southern Ontario, physical anthropological studies of discontinuous nonmetric skull traits reflecting genetic relationships have suggested that the two populations, while distinct from one another, both contributed genetically to the later Iroquoian-speaking peoples. The cultural distributions of Saugeen and Point Peninsula in Southern Ontario approximate the distributions of the preceding eastern and western regions of their Middle Great Lakes-St.Lawrence culture predecessors suggesting that this genetic split may have had considerable time depth. Using 21 selected discontinuous cranial traits, it was observed that, "The prevailing view among Iroquoianists of in situ biological and cultural developments in the Woodland period of southern Ontario prehistory is unequivocally supported by the evidence of discontinuous cranial morphology presented in this study" and "...it is feasible to argue that these skeletal data presently constitute the strongest evidence supporting the continuity hypothesis" (Molto 1983: 234). It was further noted that, in terms of biological distance, both diachronic and synchronic discontinuities appear to be absent suggesting a stable gene pool through time which, in turn, would support an Iroquoian linguistic identification for both the Point Peninsula and Saugeen complexes (Ibid: 253). While the development of the Point Peninsula complex leads to historically documented Iroquoian-speaking people, it is also probable that some adjacent Algonquian-speaking peoples participated in the same cultural development (Chapdelaine 1983: 163).

Radiocarbon dated habitation sites in Southern Ontario attributed to the Meadowood complex are stated to range from 1,000 to 500 BC (Fox 1986; Jackson 1983; I.Kenyon 1979; Spence and Fox 1986). There are, however, problems with most of the dated sites. The dates from the Ferris and Boyd Lakefront sites had single items regarded as being diagnostic of Meadowood associated with the dated features and all of the Dawson Creek site dates lacked association with the cord impressed Vinette 1 pottery despite claims to the contrary (Jackson 1986). Only the stratified Wyoming Rapids site on the Ausable River produced Vinette 1 pottery directly below a Saugeen complex occupation. This apparent Meadowood complex occupation was dated to 600 BC (I.Kenyon 1979);

paradoxically, this is the same date obtained from a deeply buried Saugeen complex site further down river (Jury and Jury 1952: 73). As there is evidence of Meadowood complex diagnostics being associated with both Saugeen and Point Peninsula complex materials, the assignment of some, if not all, of the aforementioned dates to the Meadowood complex is suspect at this time. The persistence through time of the Vinette 1 style of pottery, normally attributed to the Meadowood complex, can also cause complex-assignment problems. For example, a pit at the CaGi-1 site in the Ottawa Valley that contained a complete Vinette 1 vessel, produced radiocarbon dates of 100 BC to AD 200 making it contemporary with the major Point Peninsula occupation of the site (Mitchell 1963). Contrary to Spence and Fox (1986: Table 1.1), dates lacking diagnostic cultural associations, such as the Rickley, Morpeth South, and most of the dates from the Dawson Creek and Pointe-du-Buisson sites, are excluded as being demonstrable Meadowood complex dates. While the cultural association of the dates from the Lambert site in Québec are excellent and the readings are internally consistent and in agreement with Meadowood dates from New York (Ritchie and Funk 1973), the Ontario dates have problems regarding clearly defined cultural associations. This situation stands in marked contrast to the contemporary situation in adjacent northwestern Ohio and southeastern Michigan at the western end of Lake Erie where continuity is apparent from the late Archaic into a distinctive southern variety of Early Woodland culture (Stothers and Abel 1993).

The only convincing dates of the Meadowood mortuary complex in Canada come from the Lambert and Pointe-du-Buisson sites in Québec and the Bruce Boyd site in Southern Ontario. The Lambert site is a Meadowood complex site situated on the south shore of the St.Lawrence River upriver from Québec City. It produced dates of 900 BC on both a burial feature and a hearth (Chrétien 1993). The two pottery vessels from the site, however, are a Vinette 1 cord-impressed vessel and a dentate stamped (pseudo scallop shell) vessel. If these two vessels were part of the same occupation, the situation at the Lambert site would be similar to that of the Batiscan site further upriver where a single pseudo scallop shell sherd was associated with the dominant Meadowood complex occupation (Levesque et al. 1964). At the Pointe-du-Buisson site on the St.Lawrence River upriver from Montréal a reading of 500 BC was obtained from a typical Meadowood mortuary complex grave (Clermont et Chapdelaine 1982; Taillon et Barré 1989). Here also, however, Point Peninsula complex pottery was found in a grave but was discounted as not being associated. In Southern Ontario, near Long Point on the northshore of Lake Erie, the Bruce Boyd burial site was dated to 500 BC (Spence et al. 1990: 132-133). This age span of 1,000 to 500 BC matches dates from New York State (Ritchie: 1955; Ritchie and Dragoo 1960; Ritchie and Funk 1973).

Point Peninsula complex habitation site dates from Ontario span a period from 600 BC to AD 500 (Rutherford et al. 1984; Wilmeth 1978), 1,000 BC (?) to AD 200 in Québec (Laliberté 1993: Fig.52-1; Taillon et Barré 1987) with a narrower and much later range of AD 100 to 350 in New York (Ritchie and Funk 1973), and around AD 200 from the Winooski III site in northern Vermont (Petersen and Power 1983). Saugeen complex habitation site dates range from 800 BC to AD 600 (Finlayson 1977; Kenyon and Fox 1983; Wilmeth 1978). An interesting methodological experiment, to determine if the depth of diagnostic implements correlated with their anticipated antiquity, dated the carbonized remains inside pottery vessels from the Sand Island site on the Lower Rideau Lake of southeastern Southern Ontario. The pseudo scallop shell impressed vessels so dated both gave readings of 400 BC and a coarse dentate stamped vessel provided a date of AD 1 (Watson n.d.). In terms of depth, the earliest pottery at this site was an undated dentate stamped variety.

Two early Point Peninsula cemeteries on the now inundated Ault Park site upriver from Cornwall on the St.Lawrence River (Wright n.d.(b)) shared most of their mortuary practices with the Meadowood mortuary complex except for a marked reduction in the number of grave offerings and the absence of certain specific traits such as birdstones and large caches of special point preforms of western Onondaga chert although smaller caches of preforms of local manufacture were represented. It is suspected that the radiocarbon dates between 500 and 400 BC (Spence et al. 1990: Table 5.1) from habitation features at the site also pertain to the cemeteries. The Saugeen Cemetery 1 at the Donaldson site on the Saugeen River (Wright and Anderson 1963) is similar to early Point Peninsula burial practices in the relative scarcity of grave offerings but differs in the more limited use of red ochre and the absence of cremation.

The Adena mortuary complex in Ontario and Québec has been dated between 200 BC and AD 1 (Rutherford et al. 1984: 261; Taillon et Barré 1987; Wilmeth 1978), a much narrower time range than exists for related ceremonialism in both northern Vermont and the Maritime provinces. For example, the radiocarbon dates from the Boucher burial site in northern Vermont span 700 BC to AD 100 (Heckenberger et al. 1990). Although sharing origins in the Ohio Valley and likely a lineal descendant, the Hopewell mortuary complex, unlike the Adena mortuary complex, has a more restricted distribution in Canada. In fact it has only been recorded in Southern Ontario in any concentration in the Rice Lake region. Rice Lake area radiocarbon dates range from AD 100 to 400 (Kenyon 1986; Spence et al. 1979; Wilmeth 1978) with all of the dates coming from burial mounds. A date from Cemetery 2 of the Donaldson site on the Saugeen River near Lake Huron of approximately AD 1 was associated with diagnostic Hopewell mortuary complex items (Finlayson 1977). These dates from Ontario are in accord with the Lewiston Mound date of AD 200 from New York State (Ritchie and Funk 1973).

With Meadowood, Point Peninsula, and Saugeen date ranges of 1,000-500 BC, 1,000 BC(?)-AD 500, and 800 BC-AD 600, respectively, it would be surprising if there were no mixing of the distinctive cord impressed pottery of Meadowood with the equally distinctive varieties of dentate stamped pottery of Point Peninsula and Saugeen. Only in Québec, between Trois-Rivières and Québec City, is there substantial evidence of a Meadowood complex occupation preceding the appearance of the Point Peninsula complex but even here traces of dentate stamped pottery are present. It is probable that the Vinette 1 pottery style entered the St.Lawrence River Valley via the Richelieu River to judge from its absence from a number of multiple component sites in the Thousand Islands region of the upper St.Lawrence River (J.V. Wright unpublished survey, excavation, and analysis). The distinctive chipped western Onondoga chert preforms of the Meadowood complex are widely distributed and can be found associated with both Point Peninsula and Saugeen complex site materials. At the extensively excavated Pointe-du-Buisson 4 site near Montréal, an estimated 14 Vinette 1 vessels were recovered in contrast to 264 chipped Onondaga chert tools assumed to pertain to the Meadowood complex occupation of the site (Clermont et Chapdelaine 1982: 57-73). A percentage of these tools were also likely associated with the early Point Peninsula complex occupation of the site.

To reiterate, evidence of cultural continuity, possibly extending as far back as 4,000 BC into Middle Great Lakes-St.Lawrence culture (Tuck 1977; Wright 1984: 290), leads through the Meadowood, Saugeen, and Point Peninsula complexes to the historically documented Iroquoian-speaking peoples of northeastern North America. Anticipating Period V (AD 500 to European Contact), the sequence of events leading to the Iroquoian-speaking peoples appears to be as follows: in New York State Meadowood changes to Point Peninsula and thence through a series of stages to the Mohawk, Onondaga, Oneida, Seneca, Cayuga, and Susquehannock (Ritchie 1965); in Southern Ontario the descendants of the Point Peninsula complex provided the cultural base for the historic Huron, Petun, Neutral, Erie, and Wenro Iroquoian-speakers (Wright 1966); the situation regarding the Saugeen complex and its relationship to the Princess Point complex of Period V is still poorly understood and even the issue of whether the subsequent Glen Meyer complex was Iroquoian or Algonquian is under debate; and, finally, in the upper St.Lawrence Valley the local Point Peninsula complex passes through a regionally distinctive phase leading to the St.Lawrence Iroquois encountered by Jacques Cartier in 1535 (Clermont et Chapdelaine 1982).

The debate concerning the temporal and spatial relationships of the Meadowood, Point Peninsula, and Saugeen complexes will not be resolved to everyone's satisfaction until more dated single component and stratigraphic sequences are reported upon and cultural diagnostics, whether they be pottery styles or chipped stone tools, are viewed relative to the rest of the assemblage as well as to the other interrelated cultural systems.

Technology:

Given the current controversy surrounding the relationship of the Meadowood complex to the Saugeen and Point Peninsula complexes of Late Great Lakes-St.Lawrence culture, each of the complexes will be considered separately. Much of the controversy stems from an over-reliance on pottery styles to identify complexes and the difficulty of isolating components of comparative utility. There were two distinct pottery traditions, or what some would call horizon styles, in northeastern North America; a southerly tradition characterized mainly by beaker-shaped, conoidal based, exterior and interior cord impressed vessels and a northerly tradition characterized by dentate stamped, conoidal based vessels with carefully smoothed surfaces. Although the corded pottery tradition initially preceded the dentate stamped tradition in many areas by approximately three centuries, the distinctive pottery styles of the two traditions were for the most part contemporary and are frequently found together on the same sites. Stimulus diffusion rather than direct diffusion has been a significant factor in determining the nature of both pottery traditions. Experimentation by early potters have undoubtedly resulted in pottery varieties that may be associated with either of the two pottery traditions. Certain plain and simple punctated pottery vessels, recovered in early archaeological contexts from New Brunswick to Southern Ontario, represent such examples. The opinion that, in all instances, cord-impressed pottery preceded the appearance of dentate stamped pottery cannot be sustained in the face of stratigraphic evidence, radiocarbon dates, and the geographical distributions of the two pottery traditions relative to each other.

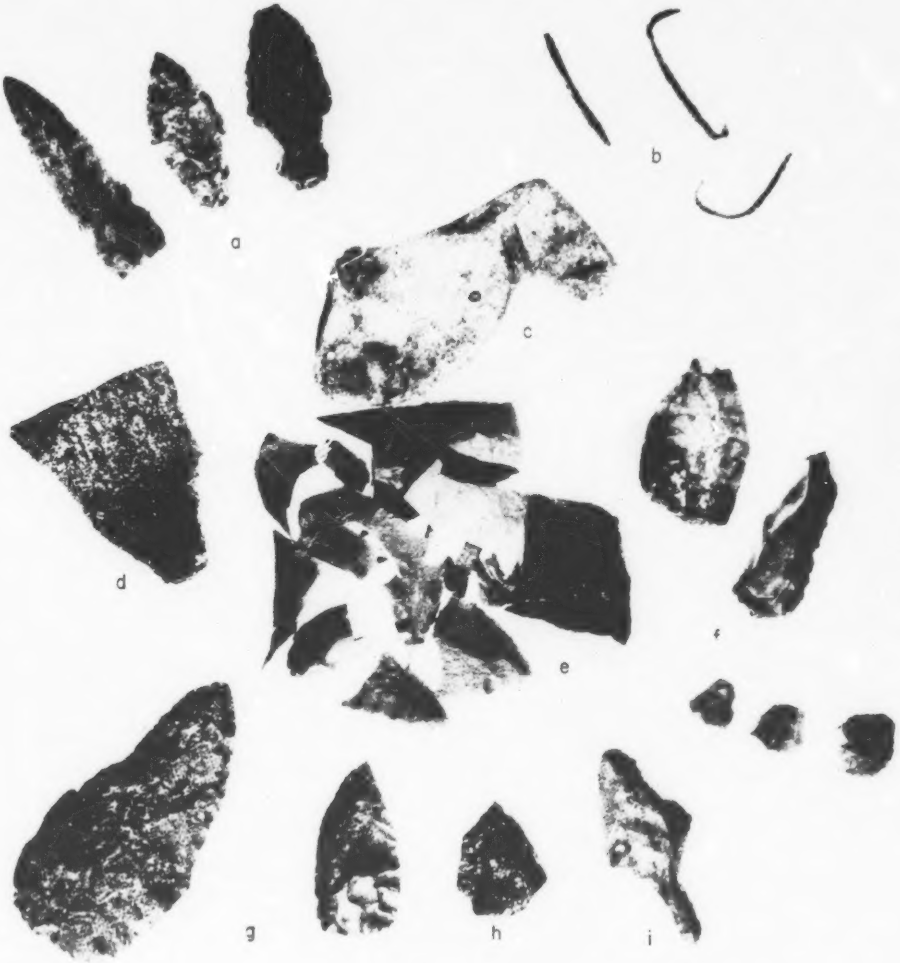
MEADOWOOD COMPLEX

The Meadowood complex is an entity occurring mainly in northern and western New York State and the St.Lawrence River Valley from Trois-Rivières to Québec City. Along the northeastern shore of Lake Erie in Southern Ontario "Diagnostic Meadowood projectiles, thin, leaf-shaped cache blades, bar gorgets, and the associated cord-impressed Vinette 1 pottery, suggest a localized intrusion into southern Ontario of Early Woodland peoples from New York" (Noble 1975: 107). Meadowood is usually identified by the presence of Vinette 1 pottery and a distinctive stone technology based upon specialized preforms, almost exclusively manufactured from western Onondaga chert. It is often impossible to isolate the presence of the Meadowood complex as the specialized preform derived chipped stone technology and the cord-impressed pottery can be found in limited quantities on both Saugeen and Point Peninsula complex sites. Explanations for the scarcity or absence of the Vinette 1 pottery style throughout most of Southern Ontario but the presence of the distinctive Meadowood stone tool-kit have ranged from arguments for special purpose sites where pottery was not used, to the disappearance of the pottery through disintegration, and/or to the refusal to adopt pottery in certain areas (Spence and Fox 1986: 4). Onondaga chert preforms and their projectile point, scraper, and drill derivatives were widely traded from a centre of production at the juncture of Lake Ontario and Lake Erie. Outside of this area the assemblage is often regarded as a product of trade rather than as an indigenous element of the local technologies. The diffusion-trade spheres of these two elements of Meadowood technology, early corded pottery and the specialized preform-based chipped stone tools, do not necessarily correlate with one another. Thus there is the paradox that the major archaeological diagnostics of the Meadowood complex represent diffused elements from outside of the complex's core area in the middle St.Lawrence River valley, western and northern New York, and probably a portion of southwestern Southern Ontario. Many researchers, however, have isolated the preform-derived tools of western Onondaga chert recovered from surface sites (Ellis et al. 1988) or mixed cultural deposits (Clermont et Chapdelaine 1982) and treated the resulting 'typological' collections as evidence of a technologically 'pure' Meadowood complex. This procedure has often been further complicated by a very loose application of projectile point typological criteria. In the case of four 'Meadowood phase' sites in southwestern Southern Ontario, for example, the thickness ranges of the 'Meadowood side-notched projectile points' (Ellis et al. 1988) all extend beyond the original type description which states that such points rarely exceed 3/16" (5 mm) in thickness (Ritchie 1961: 35). The foregoing may appear to be so much nit-picking but as the Meadowood projectile point is regarded as the first evidence of the bow and arrow weapon system, form and metrical characteristics become critical criteria in separating arrowheads from the earlier darts and spearheads. More crudely fashioned dartheads characteristically occur together with Meadowood side-notched arrowheads on single component sites but are invariably excluded as part of the Meadowood technology from sites with mixed deposits. Such a procedure naturally obscures issues of cultural change and transition. Viewing such arbitrarily determined 'assemblages', divorced from implements which do not fit the preconceived 'typological' template, results in an assemblage whose homogeneity, much less its existence, is a myth.

It is speculated that the Onondaga chert preform based tool kit was the product of a unique commercial reaction to the introduction of the bow and arrow into eastern North America. The tips of arrows propelled by bows are distinguished from dartheads propelled by spearthrowers by haft thicknesses and notch widths of the stone piercing tips (Wright 1994: 61; see Figure 73). Specialized craftsmen, centred at workshops near the high quality Onondaga cherts on either side of the Niagara River, produced enormous quantities of preforms which could be readily fashioned into a number of different types of tools. Unlike earlier and later preforms, the metrical and morphological uniformity of Meadowood preforms suggests that only a limited number of specialized stone knappers were involved in their production (Fox 1984); a likelihood supported by the fact that on sites distant from the western Onondaga chert sources chipping detritus of this material is rare despite an abundance of finished tools in Onondaga chert indicating that Onondaga chert cores were not being traded but finished tools. The specialized preform technology would appear to represent a unique circumstance involving the controlled production and distribution of a prepackaged product which could then be recycled into a range of tool varieties beginning with arrowheads and ending with small end scrapers and drills. The geographically local nature of this enterprise is clearly indicated by the nearly exclusive use of western Onondaga chert. However, there were variations on the foregoing scenario. At the Lambert, site a short distance upriver from Québec City on the southshore of the St.Lawrence River, a cache of Meadowood preforms were manufactured from an eastern variety of Onondaga chert (Hammer 1976: 48) rather than from the typical western Onondaga chert whereas the other Meadowood complex tools from the site were made from chert from the latter geological source (Chrétien 1995: 190). The fact that the majority of the Onondaga chert tools at the Lambert site had been exposed to fire, in contrast to the lack of evidence of burning on local chert tools (Ibid: Tableau 6), led to the interesting suggestion that the Meadowood 'diagnostics' pertained to a ceremonial function rather than to the secular use of the tools manufactured from local cherts. This has led to the suggestion that the Meadowood complex specialized preforms and their derived tools at the Lambert site and other eastern Meadowood complex sites should be regarded as a ceremonial expression of a broad exchange network in which local people participated (Chrétien 1995: 198). In part, it was the presence of Terminal Archaic projectile points manufactured from local stone at the Lambert site that influenced the preceding interpretation. While Meadowood complex sites are distributed along the St.Lawrence River as far east as Cap Tourmente to the east of Québec City (Ibid: Carte 1, 187), the sites involved are either mortuary sites or produced small samples. An exception to the foregoing is the Batiscan site located further upriver near Trois-Rivières. This site is an excellent candidate for a single component site and contained a number of Terminal Archaic point styles in association with used typical Meadowood side-notched points, the latter manufactured from western Onondaga chert. It is agreed that the specialized preform derived tools of the Meadowood complex were grafted onto the local chipped stone tool industry but not that this occurrence, in all instances, related to a ceremonial function.

Most important of the specialized preform derivatives was the Meadowood side-notched projectile point which accommodated the special hafting and aerial dynamic requirements of the bow and arrow and, in this respect, differed from the requirements of the weapon tips of the earlier spearthrower. The replacement of the spearthrower by the bow and arrow was a gradual process as indicated by the presence of spearthrower dartheads on Meadowood complex sites like Batiscan in Québec (Levesque et al. 1964) and Muskalonge Lake in New York (Ritchie 1955) and the association of dartheads and Meadowood side-notched arrowheads on Saugeen and Point Peninsula complex sites like Donaldson (Wright and Anderson 1963) and the Serpent Mounds site (Johnston 1968). Thus, in Late Great Lakes-St.Lawrence culture there is not only the interplay of two different pottery traditions but also of two different weapon systems requiring distinctively different chipped stone arming tips. If the ancestors and descendants of the Meadowood populations are to be archaeologically recognized, consideration of introduced elements of technology, like pottery and the specialized preforms and their derivatives, should be temporarily excluded from consideration lest they obscure continuities in the remainder of the technology. Some archaeologists have recognized the implications of regarding the western Onondaga chert specialized preforms and their derivatives as typical diagnostic Meadowood complex traits. "Cependant, si tel fut le cas, nous serions alors devant une technologie exotique et non seulement devant un matériau exotique" (Clermont 1990: 8-9). It is noteworthy that the association of the bow and arrow with a particular high quality stone from a restricted geological source is not unique to the Meadowood complex but, as will be seen in subsequent chapters, also occurred in Late Western Shield culture with Hudson Bay Lowland chert, Late Plains culture with Knife River flint, and Late Plateau culture and initially Late West Coast culture with vitreous basalt from the Canadian Plateau. The association of the introduction of the bow and arrow with a specific variety of stone for the weapon tips is of considerable anthropological significance. It suggests that symbolic meaning was initially attached to the particular stone to be used as arrowheads. In this respect, the diffusion of the bow and arrow was not simply a technological transfer but was also a process with symbolic content. The phenomena of the use of a distinctive variety of stone to tip the earliest wooden arrow shafts may represent one of the most compelling pieces of evidence relating to the spread of the weapon system. Metrical and form analyses of stone weapon tips can say what cannot be attached to a wooden arrowshaft but cannot accurately isolate all dartheads from arrowheads as a diminutive darthead could still function effectively with a spearthrower, especially as most spearthrower spears were composite implements with smaller diameter foreshafts.

Table 9 lists the frequencies of artifact categories from four Meadowood sites; the Batiscan site near Trois-Rivières on the St.Lawrence River (Levesque et al. 1964), the Pointe-du-Buisson 4 site upriver from Montréal on the same river (Clermont et Chapdelaine 1982), the Scaccia site in central New York State (Funk 1973), and the Riverhaven 2 site on Grand Island in the Niagara River between Ontario and New York (Granger 1978). The following information is pertinent: the Batiscan site is isolated 1.6



BLACK AND WHITE PLATE XXIV: MEADOWOOD COMPLEX ARTIFACTS, MAINLY FROM THE BATISCAN SITE, QUÉBEC: a - two dartheads to the right and a Meadowood type arrowhead to the left; b - a tubular copper bead to the left and a copper fish hook to the lower right with a copper item of unknown function in-between; c - preform of a birdstone; d - a Vinette 1 rim sherd; e -a fire fractured large 'mortuary' biface blade; f - large and small end scrapers; g - biface knives; h - a graphite nodule used as a paintstone; and i - a drill. (Reproduced from Wright 1979: Plate 11) km back from the St.Lawrence River bank by isostatic rebound and is capped with a layer of sterile sand thus representing a good example of a single component site but had limited bone preservation; the Pointe-du-Buisson 4 sample was isolated from other occupations at the site on the basis of both typology and the presence of western Onondaga chert and, therefore, is a typological and material of manufacture construct rather than a contextual component; the Scaccia site component consists of those materials from pits which produced diagnostic materials and thus there is also an assemblage bias but not as severe as with Pointe-du-Buisson 4; and the Riverhaven 2 site consisted of a midden capped by a layer of sterile sand with 75% of material being recovered from large storage pits and with the Batiscan site are the two best candidates for single, unmixed components (Granger 1978: 194 and 205). Situated near the geological deposits of western Onondaga chert, a major activity at the Riverhaven site was the production of the specialized Meadowood preforms resulting in a strong workshop factor being clearly evident in the cultural remains. In order to reduce distortion of the comparative process caused by preform production activities only the finished preforms or cache blades have been tabulated. Given the differences in descriptive details provided by the various authors, the varieties of certain tool classes like scrapers are not qualified. In a detailed examination of the evidence of Meadowood sites in southwestern Southern Ontario (Spence and Fox 1986: 15-29), not a single excavated sample size approaching that of the Scaccia or Batiscan sites was recorded although the existence of such large base camps have been proposed on the basis of surface materials from locales such as the Welke-Tonkonoh site (Ellis et al. 1988).

Table 9 clearly illustrates the problems inherent in creating a cultural entity from mixed archaeological deposits based upon assumptions of cultural association involving typology and material of manufacture (Clermont et Chapdelaine 1982: 58). This is indicated by the limited inventory from the Pointe-du-Buisson site. The observation, "On y retrouve partout une mème bôite à outils composée surtout de pièces en chert Onondaga et comprenant de lames de cache, des pointes et des grattoirs triangulaires caractéristiques. Cette principale matière première et cette trilogie typologique qui relient la majorité de sites font croire à l'existence de relations étroites, directes ou indirectes, couvrant un territoire de plus de 800 km. de longuer" (Ibid: 57) does not apply to large areas of the northshore of the Lower Great Lakes and the upper St.Lawrence River. The special purpose function of the Riverhaven 2 site is clearly reflected in the frequency of 'finished' preforms, sometimes called 'cache' or 'mortuary' blades. If earlier stages of preform production had been included in the Table the other tool frequencies would have been overwhelmed. While people would have carried out other tasks at the Riverhaven 2 site it is apparent that a specialized form of stone preform production was the activity that left the dominant archaeological record.

Artifact Class	Batiscan		Pt. Buisson		Scaccia		Riverhaven	
	f	%	f	%	f	%	f	%
Pottery vessels	44	14.3	14	10.5	22	19.8	3	2.1
Pottery pipe	-	-	-	-	-	-	1	0.7
Projectile pts.	50	16.3	9	6.8	27	24.3	10	7.1
End scrapers	118	38.4	72	54.1	3	2.7	24	17.0
Other scrapers	35	11.4	-	-	1	0.9	P	P
Biface knives	22	7.2	12	9.0	22	19.8	2	1.4
Linear flakes	3	1.0	-	-	2	1.8	-	-
Drills	4	1.3	16	12.0	9	8.1	10	7.1
Strike-a-lights	1	0.3	-	-	1	0.9	-	-
Graphite nodules	7	2.3	-	-	-	-	-	-
Abraders	12	3.9	-	-	-	-	4	2.8
Copper beads	7	2.3	-	-	-	-	-	-
Copper fish-hook	1	0.3	-	-	-	-	-	-
Copper chisels	2	0.7	-	-	-	-	-	-
Copper awl	1	0.3	-	-	-	-	-	-
Cache blades	-	-	10	7.5	3	2.7	66	46.8
Hammerstone	-	-	-	-	4	3.6	-	-
Fossil horn coral	-	-	-	-	4	3.6	-	-
Celts	-	-	-	-	4	3.6	2	1.4
Flake saw	-	-	-	-	1	0.9	-	-
Anvil-hammer	-	-	-	-	1	0.9	-	-
Soapstone vessel	-	-	-	-	1	0.9	-	-
Stone pendants	-	-	-	-	2	1.8	-	-
Bone awls	x	x	-	-	3	2.7	12	8.5
Bone whistle	x	x	-	-	1	0.9	-	-
Antler flakers	x	x	-	-	-	-	5	3.6
Netsinker	-	-	-	-	-	-	1	0.7
Birdstone	-	-	-	-	-	-	1	0.7
Totals	**307**	**100.0**	**133**	**99.9**	**111**	**99.9**	**141**	**99.9**

TABLE 9: FREQUENCIES OF ARTIFACT CATEGORIES FROM FOUR MEADOWOOD COMPLEX HABITATION SITES It was necessary to take certain liberties with the earlier published artifact descriptions in order to achieve equivalent comparative units. From the Scaccia site one vessel was counted for each pit which produced Vinette 1 sherds and x equals poor bone preservation.

Pottery vessels were most common at the Batiscan and Scaccia sites but still represented only a small percentage of the total artifact inventory. Most of the vessels can be classified as the Vinette 1 pottery type (Ritchie and MacNeish 1949: 100) typical of the southern corded pottery tradition. Of conoidal based form, with straight to slightly everted rims, these coil manufactured vessels with their coarse grit temper were generally impressed with a cord-wrapped paddle on both the interior and the exterior surfaces of the vessel. Minor vessel varieties at the Scaccia site consisted of incising over a corded exterior and plain forms (Funk 1973: 108) while at the Batiscan site plain vessels and vessels with cord impressions on the interior only were recorded (Levesque et al. 1964:

Tableau 1). Also present at the latter site was a single sherd of a dentate stamped (pseudo scallop shell) vessel typical of the Point Peninsula and Saugeen complexes. At the Bruce Boyd site on the northshore of Lake Erie, a number of refuse pits had been dug into the cemetery (Spence and Fox 1986: 26; Spence et al. 1990: 137). These contained Vinette 1 vessels as well as vessels with irregularly spaced punctates, not unlike a pottery vessel from a contemporary Saugeen site on the Lake Huron coast (Jury and Jury 1952: Plate XII) and some of the vessels apparently associated with Vinette 1 pottery at the Dawson Creek site on Rice Lake (Jackson 1980: 22). Vessels with vertical bands of annular punctates, a decorative attribute recorded from Saugeen complex sites, were also recovered at the Bruce Boyd site. The foregoing indicates decorative variability in Meadowood pottery as well as the existence of shared traits with early Saugeen and Point Peninsula complex sites. While Vinette 1 vessels are abundant at a number of New York sites, such as the Vinette and Wickham sites (Ritchie 1944), it was impossible to isolate components suitable for comparative purposes. At the stratified O'Neil site in central New York State a 1,500 BC Susquehanna Archaic component produced Vinette 1 pottery sherds associated with fragments of soapstone vessels. This represents the earliest date and cultural association for the Vinette 1 pottery type in the region.

The Vinette 1 pottery type belongs to a corded pottery tradition distributed in an east-west band from the coast of the New England states to North Dakota. It has also been called a horizon style (Petersen and Sanger 1991) but, given its considerable time depth, the term 'tradition' is preferred here. Within this distribution, that includes New York, Vinette 1 pottery represents the earliest or one of the earliest pottery styles to appear, only being preceded in some eastern areas by plain steatite tempered pottery vessels (Manson 1948). The latter vessels duplicate the form of the steatite stone bowls of the Susquehanna Archaic. A pottery vessel from the 3,000 year old Jamesport site on Long Island, New York, not only replicated the earlier stone bowl form but also had cord-wrapped paddle impressions on both the interior and exterior surfaces (Ritchie 1965: 172). Neither the Archaic stone bowls with lugs reproduced in pottery nor the Vinette 1 pottery forms are similar to pottery styles in the southeastern United States from whence the concept of pottery manufacture must have diffused (Bullen 1971). It appears that in these pottery styles archaeologists have an exceptional example of the role of stimulus diffusion on an introduced element of technology. Given the earlier dates from some sites producing Vinette 1 pottery in New York State, the comparative abundance of the pottery type in the State, and its occasional direct association with terminal Archaic soapstone vessel sherds (Funk 1973; Ritchie 1944: 146) it is reasonable to assume that the concept of pottery was first introduced to Canada from this region.

The tubular pottery pipe is a rare Meadowood trait but it does represent early evidence of smoking. Manufactured from the same grit tempered paste as the Vinette 1 pottery vessels, pipes have been recovered from a number of Meadowood cemeteries in New York (Ritchie 1965: 193). Their association with the deceased suggests that their function was sacred rather than mundane. As historical documentation indicates, a wide range of plant materials were smoked for an equally wide range of purposes (Yarnell 1964) the presence of these first pipes do not necessarily indicate the use of tobacco (*Nicotiana tabacum*).

An outstanding characteristic of the Meadowood chipped stone technology is the abrupt appearance of very thin and symmetrical side-notched points called Meadowood points (Ritchie 1961: 35-36). These distinctive projectile points, which differ markedly in terms of both form and metrics from earlier point forms, are inferred to represent the initial introduction of the bow and arrow into the region. Form and metrical attributes of the Meadowood point type, particularly the more easterly examples such as from the Batiscan site (Levesque et al. 1964: 32-33), are similar to those of a contemporary Middle Palaeo-Eskimo culture (Groswater complex) in the northern Gulf of St.Lawrence (Cox 1978: 103-104; Fitzhugh 1972: 148-151; Pintal 1994; Renouf 1994; Tuck 1976: 87-91). Meadowood side-notched points and the Groswater points even share quite specific attributes such as double side-notching and unifacially bevelled bases (e.g. Ritchie 1961: 35-36 compared to Renouf 1994: 174-175). Initially the Middle Palaeo-Eskimo culture points were bifacial in cross-section (Auger 1986), like the Meadowood complex points, but became progressively plano-convex in cross-section; likely as an aid to hafting in harpoons (Renouf 1994: 174). Similar types of side-notched projectile points also occur on late Middle Shield culture sites in the Canadian Shield of Québec (Marois et Gauthier 1989: Planches VII, 11, IX, 5, XIV, 8) and eastern Ontario and it was probably through Middle Shield culture intermediaries that the technology was transferred from the east coast into the interior. Meadowood side-notched points average 4 mm in thickness at the basal hafting point. Such a thickness would accommodate ethnographic samples of wooden arrow shafts with average diameters of approximately 9 mm (Figure 73). In contrast, the majority of dartheads from Meadowood sites such as Batiscan are too thick to be hafted onto an arrow shaft and, therefore, must have functioned as spearthrower darts or spears. The ratio of the Meadowood arrowheads to dartheads from the Batiscan site in Québec and the Scaccia site in New York is virtually identical at 1:2. The dominant position of the earlier spearthrower weapon system would suggest that both of these sites are early, a probability supported by the Scaccia site radiocarbon date of 1,000 BC. As could be anticipated, the replacement of the earlier weapon system by the bow and arrow would have been a gradual rather than sudden process. Another feature of the Meadowood side-notched projectile point relative to the associated dartheads is the fact that the vast majority of the former were manufactured from a distinctive variety of Onondaga chert found on either side of the Niagara River in Ontario and New York. Sites in this region, such as the Riverhaven 2 site, appear to have been in the business of producing large quantities of carefully flaked performs (Granger 1978). Such preforms are frequently called cache or mortuary blades because of the large quantities often found in Meadowood graves. It is speculated that the Meadowood bands in possession of the western Onondaga chert sources began producing large numbers of specialized preforms for trade to more distant bands. It is further speculated that the demand for such preforms resulted from the widespread adoption of the bow and arrow with its associated requirement of a precision of projectile point form and balance that exceeded that of the earlier spearthrower weapon tips. In this respect, the specialized preforms coming from the Niagara region would have filled a temporary gap in skills until local stone knappers acquired the ability to manufacture points meeting the requirements of the new weapon system. It can also be anticipated that the adoption of a new weapon system was infused with ritualistic importance unrelated to the practical mechanics of function. Extensive use of a specific form of chert for the manufacture of arrowheads and other tools based on the specialized preforms suggests that supernatural powers were associated with the western Onondaga chert which enhanced the effectiveness of the new weapon. After 500 years (1,000 to 500 BC), the precision of projectile point manufacture apparent in the Meadowood point degenerated somewhat.

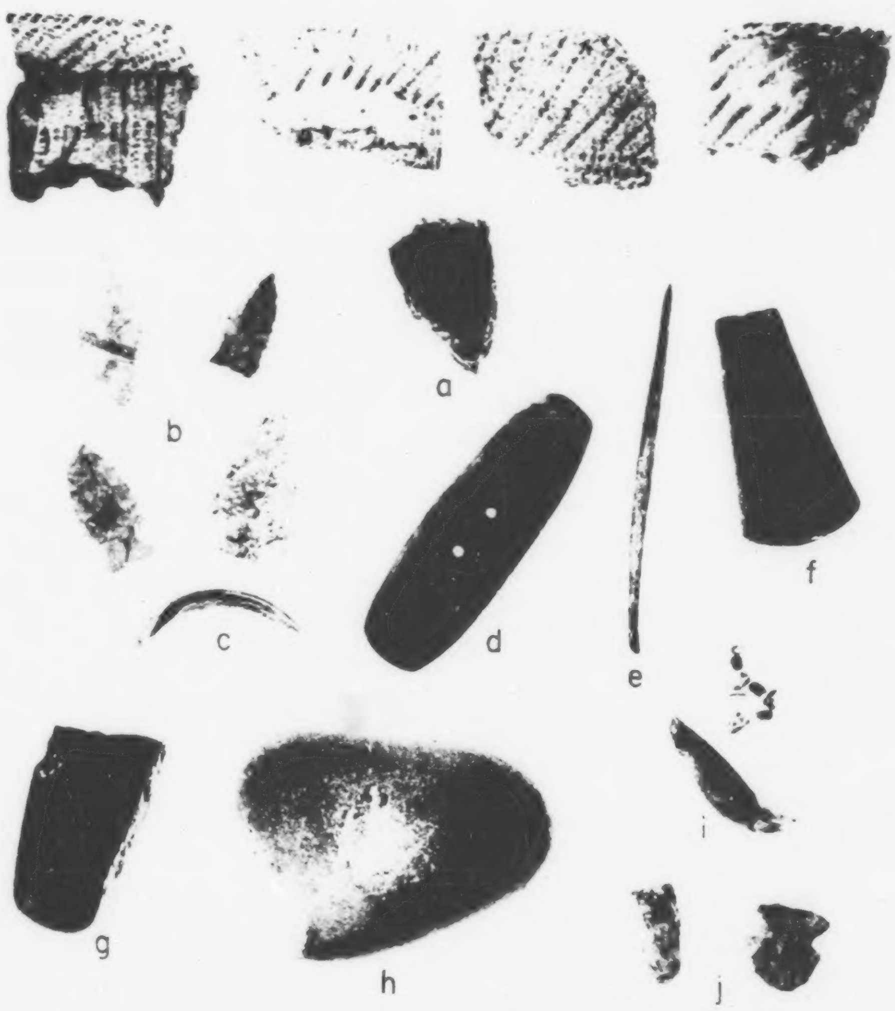
A unique element of the Meadowood chipped stone technology was the use of specialized preforms of western Onondaga chert to manufacture projectile points, scrapers, scraper-knives, and drills. As such, the preforms were the foundation of a tool kit which was adaptable to a range of different curation processes. At the Batiscan site, end scrapers manufactured from such preforms represented more than a third of the entire tool assemblage while similar such end scrapers were barely present at the Scaccia site. As scrapers are believed to have been used in the processing of hides and the manufacture of wooden and bone tools, their near absence from the Scaccia site may indicate that the site was not a wintering camp where tool and clothing refurbishment would have been primary activities. This possibility is supported by the faunal and plant remains from the site which suggest that it was occupied from early summer to fall (Funk 1973: 114). It is also of interest to note that the Batiscan site lacked the numerous storage pits found at the Scaccia site, which is perhaps, a reflection of a different season of occupation with differing activities. Unfortunately, the scarcity of faunal and floral evidence from the Batiscan site did not permit a determination of season of occupation although its location at the foot of a terrace, which would have provided protection from north winds, may indicate a winter occupation. An initial early winter occupation would also explain the absence of pits. Stone drills of triangular or expanding base form or made from reworked Meadowood side-notched points are a minor Meadowood trait. Chipped and ground celts appear to be either absent or rare as are ground slate birdstones and gorgets, tubular pottery pipes, and copper adzes.

Hematite, limonite, and graphite paintstones are common on some sites. The native copper artifacts from the Batiscan site likely reflect proximity to a major copper transportation route from the Upper Great Lakes via the Ottawa River to the St.Lawrence River. The bone tool industry is not well represented even at sites with good bone preservation. Antler flakers, beaver incisor knives hafted in antler handles, club spikes, bone projectile points, beads, single barbed harpoons, and daggers have been recorded (Ritchie 1965). Fragments of a 5 cm mesh gill net, probably manufactured from Indian hemp fibres, and twined basketry preserved by charring in graves (Ritchie 1965: 193) are but weak reflections of what was undoubtedly a once rich and important element of Meadowood material culture. Finally, fire fractured rocks are relatively abundant on sites suggesting cooking by boiling and baking with heated stones.

The disappearance of the Meadowood complex as a recognizable cultural entity in the St.Lawrence Valley, New York, and adjacent regions was a result of the gradual replacement ofVinette 1 pottery with dentate stamped and cord-wrapped stick impressed pottery as well as the abandonment of the stone technology based upon specialized preforms. Meadowood simply blended into the Point Peninsula complex, although in New York this occurred with a greater emphasis on cord impressed pottery than in adjacent areas of Canada.

SAUGEEN COMPLEX

The Saugeen complex occupied southwestern Southern Ontario from the Bruce Peninsula on Georgian Bay to the northshore of Lake Erie. The Niagara Escarpment appears to have formed a frontier between the bands making up the Saugeen and Point Peninsula complexes. A poorly defined contemporary culture called Early Western Basin or the Couture complex occupied the extreme southwestern portion of Southern Ontario (Spence et al. 1990; Stothers 1975). An earlier occupation of most of this territory attributed to the Meadowood complex (Spence and Fox 1986) has yet to be demonstrated. While Meadowood, as represented by Vinette 1 pottery and a range of implements derived from the specialized preform technology, occupied portions of southwestern Southern Ontario, particularly along the northshore of Lake Erie, the remainder of the region appears to have moved directly from Middle Great Lakes-St.Lawrence culture (Terminal Archaic) to the Saugeen complex of Late Great Lakes-St.Lawrence culture. Materials from the Boresma site on the Thames River down river from London suggest the existence of considerable regional variability within Saugeen material culture (Wilson n.d.). For example, throughout the nearly 1,000 years of occupation represented at this partially stratified site there are significant differences relative to the more northerly sites that were originally used to define the Saugeen complex.



BLACK AND WHITE PLATE XXV: SAUGEEN COMPLEX ARTIFACTS, MAINLY FROM THE DONALDSON SITE a - rim sherd fragments from five pottery vessels with different decorations; b - dartheads; c - beaver incisor tool; d - polished slate two-hole gorget; e - copper awl; f - copper axe; g - polished stone adze; h - combination hammer and anvilstone; i - elements from a necklace found with a child consisting of copper beads from Lake Superior, marginella shell beads from the Atlantic coast, and one of two ground bear canines; and j - end scrapers, one manufactured from a broken darthead. (Reproduced from Wright 1972: Plate 11)

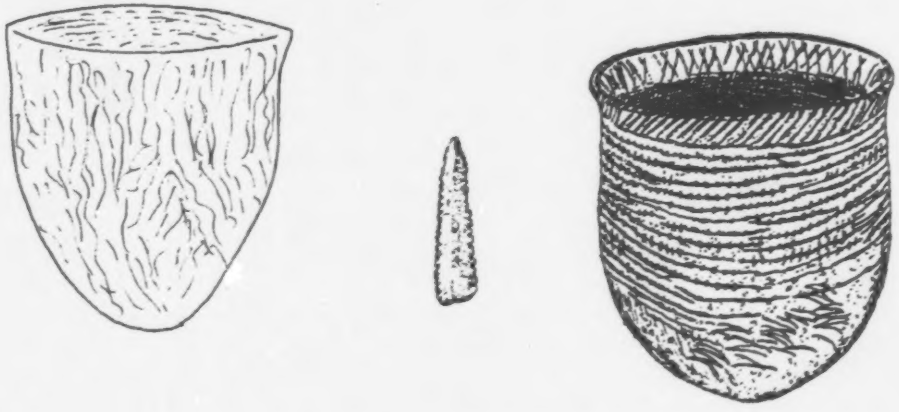


FIGURE 59: TYPICAL MEADOWOOD COMPLEX AND SAUGEEN COMPLEX POTTERY VESSELS Vinette 1 vessel typical of the Meadowood complex, to the left, is characteristically impressed vertically and/or obliquely with a cord-wrapped paddle on the exterior with horizontal impressions made with the same tool on the interior. In contrast, the Saugeen complex vessel, to the right, has a series of complex designs realized with a notched pottery decorator such as the stone implement illustrated between the two pots. (Scale variable. Drawings by Mr. David W. Laverie)

Saugeen pottery vessels were typically manufactured using a poorly kneaded and heavily grit tempered clay paste similar to the paste used to manufacture Early Woodland vessels further south. The conoidal based vessels, ranging from 25 to 30 cm in height (Finlayson 1977: 617), were coil constructed and occasionally exhibit a distinctive mortice and tenon locking technique at the juncture of the coils (Wright and Anderson 1963: 31). Isolating discrete components in the large spring-through-summer fishing camps of the Saugeen complex has been difficult. One suggested chronological sequence, based on changes in pottery decorative techniques through time, has pseudo-scallop shell impressed (a distinctive form of dentate stamping) and dentate rocker impressed pottery as characteristic of the period 700 BC to AD 100 and the latter technique and square to rectangular dentate stamping as typical of the period AD 100 to 800 (Finlayson 1977: 583-590). As with the Meadowood complex, end scrapers, biface knives, and projectile points were the most common stone tools in the Saugeen tool kit while both the ground stone and the bone tool industries were weakly developed (Finlayson 1977; Wright and Anderson 1963). Contrary to the habitation site situation, the AD 1 Cemetery 2 at the Donaldson site (Finlayson 1977) produced a rich array of bone awls, beamers, toggling harpoons, worked rodent incisors including an antler hafted beaver incisor tool, and other items. Scrapers, hammerstones, and ground stone celts appear to increase through time while quartzite cobble spall tools, choppers, and toggling harpoons decrease and eventually disappear. There is indirect evidence for the existence of the gill net in the form of stone netsinkers and the prevalence of fish-ducks and loons in the limited avian remains (diving fish-eating birds are often caught accidentally in gill nets). Such bird remains are only common on the coastal sites suggesting that at the riverine sites some kind of weir-trap device was employed for capturing fish in the fast water beside which the large warm weather base camps are always situated.

Single component Saugeen complex sites are rare. More than 500 years of Saugeen occupational debris is represented at the large Donaldson site on the Saugeen River near its embouchure into Lake Huron but the deposits can only be partially separated into components on the basis of both pit contents and stratigraphy. A pit dated to 600 BC at this site contained predominantly Saugeen style pottery along with some of the Vinette 1 pottery characteristic of the Meadowood complex. This radiocarbon date supports the original early estimated age of this site, which had been based upon technological continuities in the stone tool assemblage with the late Period III Middle Great Lakes-St.Lawrence culture of the region. Other pits also produced minor amounts of Vinette 1 pottery directly associated with Saugeen materials.

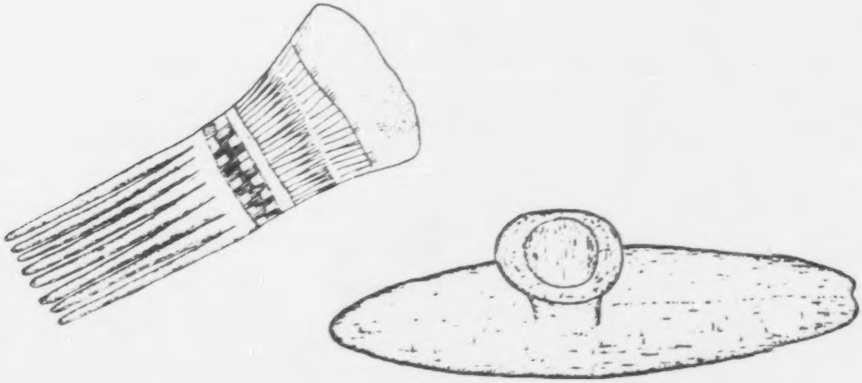


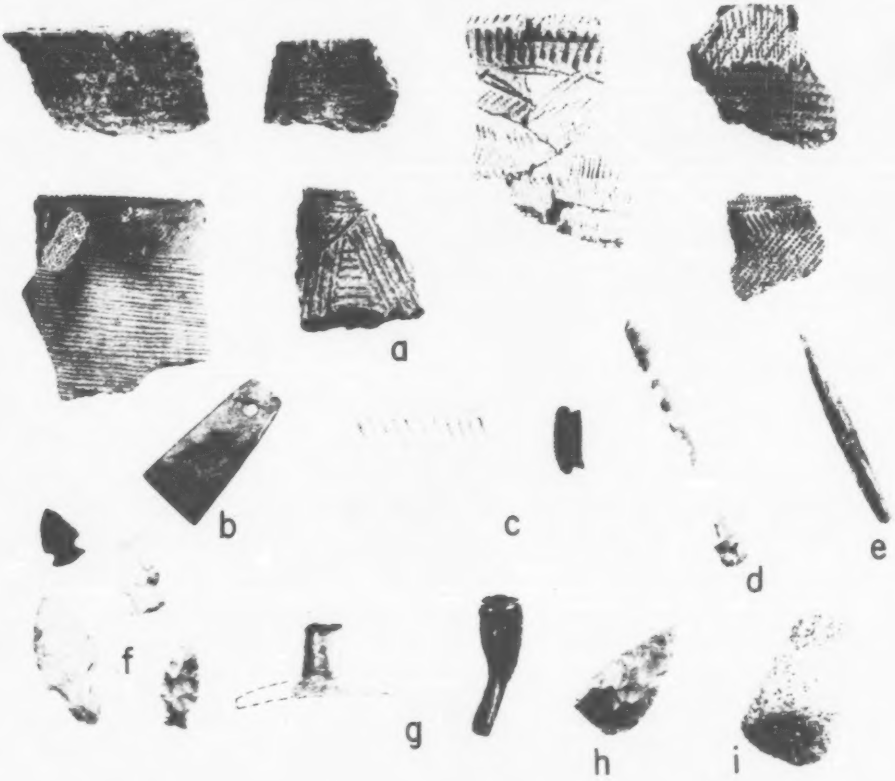
FIGURE 60: LATE SAUGEEN COMPLEX ANTLER HAIRPIECE AND STONE PLATFORM PIPE These two items were among the grave offerings placed with an adult male burial that was accidentally discovered at the mouth of the Grand River where it enters Lake Erie. The grave would date to the transition of Period IV into Period V. The hairpiece is 25.6 cm long and the soapstone platform pipe is 21.5 cm long. (Drawings by Mr. David W. Laverie)

POINT PENINSULA COMPLEX

Point Peninsula complex is distributed throughout southeastern Southern Ontario, the southern margins of the Canadian Shield, the St.Lawrence River down river to Québec City, most of southeastern Québec, along the Richelieu River into Lake Champlain and northern Vermont, and throughout most of New York. Unquestionably it is the distinctive stamped pottery that provides this large and ecologically diverse region with some appearance of cultural homogeneity. The pottery, unlike that of either the western Meadowood or Saugeen complexes, is characterized by superior modelling of the clay with vessels being thinner, better fired, and containing finer grit temper. In this respect, the paste characteristics of the early dentate stamped pottery of Point Peninsula have more in common with eastern Meadowood sites like Batiscan. Decorative stamping implements are also more delicate, decoration is more carefully applied than it is in the Saugeen complex, and the motifs are more precisely executed. Dominant techniques used to decorate these semi-globular vessels with conoidal bases were a distinctive form of dentate stamp (pseudo scallop shell) and dragged stamp in the early stages with increasing frequencies of dentate and rocker impressed vessels and an eventual late appearance of some cord-wrapped stick impressed pottery (Wright 1967: Table 36, 120). Another difference between the Point Peninsula and Saugeen pottery is the much higher incidence of interior channelling on Point Peninsula vessels. Interior channelling was realized by smoothing the interior of the still plastic clay with the toothed edge of a dentate tool; presumably the same tool used to decorate the pot. Rarer traits, such as the use of mortice and tenon coil joints, were shared with Saugeen but the presence of a red ochre wash on the exterior and lip of some vessels is a trait shared with Late Western Shield culture (Laurel) potters to the north and west in adjacent northern Ontario and Québec. Through time vessels become larger and more globular in shape and bases become more rounded with the decoration increasingly being restricted to the upper portion of the vessel.

The Point Peninsula complex stone tool kit is dominated by small end scrapers and a wide range of notched and stemmed darts and arrowheads. Projectile points were often manufactured in a somewhat cavalier fashion. In contrast, the precision evident in the Meadowood side-notched points was predetermined by the precision inherent in the specialized preforms which left little room for personal idiosyncrasies in manufacturing skill or inclination.

Point Peninsula campsites, like most Saugeen and Meadowood sites, were repetitively occupied and contain debris ranging from Middle Great Lakes-St.Lawrence culture and earlier up to the time of European contact. In those rare instances where stratigraphic separation is possible, such as at some of the Rice Lake sites (Ritchie



BLACK AND WHITE PLATE XXVI: POINT PENINSULA COMPLEX ARTIFACTS FROM ONTARIO a - rim fragments from seven pottery vessels; b - ground slate pendant; c - this notched soapstone pottery decorator was used to produce the designs in the plasticine to the left; d - antler flaker for chipping chert; e - bone awl; f - stone arrowheads and dartheads; g - two styles of soapstone smoking pipes; h - a biface knife manufactured from Pennsylvania jasper; and i - a polished stone adze. (Reproduced from Wright 1972: Plate 9)

1949) and the Winooski site in northern Vermont (Haviland and Power 1981: 97; Petersen and Power 1983), the samples recovered are generally too small to measure cultural change excepting attribute changes in the pottery vessels. Other sites, such as the Serpent Mounds site (Johnston 1968), may be predominantly single components in the sense of representing a temporally limited period of occupation. Despite extensive excavations at this major habitation and burial site, very little material other than pottery was recovered. The bone industry at this site is represented by numerous awls, some antler flakers, and rare socketed antler points, bilaterally and unilaterally barbed harpoons, turtle shell pottery markers, a beaver incisor tool, and a drilled bear canine.

Relative to origins and the relationship between the two distinct pottery traditions of cord impressing versus dentate stamp impressing, it is of interest to note that many Point Peninsula sites contain late Middle Great Lakes-St.Lawrence culture projectile point styles and an occasional Meadowood arrowhead in association with typical Point Peninsula pottery but only rarely with Vinette 1 pottery (Johnston 1968; Ritchie 1949). This situation is the opposite to what is found on the other side of Lake Ontario in New York. Forty years ago William A. Ritchie (1949: 19) suggested that the dentate stamped pottery style originated in Ontario. Contrary to statements to the affect that the lithics from the Dawson Creek site on Rice Lake are "...largely Meadowood types..." and "...the ceramics are related to Vinette 1..." (Spence and Fox 1986: 29), it is far from clear whether this multi-component site has a pure Meadowood component. The dated pits contained either the remains of a single Vinette 1 pottery vessel or a Meadowood side-notched point not associated with any Vinette 1 pottery fragments. The majority of the aforementioned pottery fragments represented undecorated vessels or vessels with channelled interiors (Jackson 1977), the latter attribute suggesting the presence of dentate stamped pottery as a dentate tool was used to form the distinctive interior channelling by being dragged across the wet clay. These occurrences raise the possibility that the Dawson Creek site has an early Point Peninsula occupation with an admixture of Meadowood materials. In fact, the excavator of the site noted that "...a homogeneous cultural manifestation on the Early Woodland time level was not present, or at least did not have temporal persistence, throughout Southern Ontario" (Jackson 1977: 76) and that "...it might be suggested that Vinette 1 ceramic influences were most strongly felt in portions of southwestern and southeastern Ontario lying adjacent to New York State" (Ibid: 72). Over half of the Dawson Creek site radiocarbon dates attributed to 'Probable Early Woodland' (Spence and Fox 1986: Table 1.1) came from features either lacking Meadowood diagnostics or containing materials which could relate to an early Point Peninsula occupation (e.g. pottery with channelled interiors). Pertinent to both the retention of the Vinette 1 pottery type in time and its association with typical Point Peninsula materials is a complete AD 1 Vinette 1 vessel associated with Point Peninsula style projectile points from a predominantly Point Peninsula site on the Ottawa River (Mitchell 1963; 1966). Similarly, at the McIntyre site on Rice Lake (Johnston 1984), where Meadowood arrowheads and typical varieties of Meadowood scrapers, drills, and possible preforms were recovered, only a single Vinette 1 pottery sherd was found in contrast to a number of dentate stamped sherds. The AD 100 Point Peninsula occupation of the Dougall site at the narrows between Lake Simcoe and Lake

Couchiching (Wright 1972d) also contained Vinette 1 sherds but no Meadowood preform derived tools. These two early pottery traditions in northeastern North America were for the most part contemporary but with geographically discrete, albeit adjacent, distributions as technological entities. Under the circumstances the co-occurrence of the two pottery traditions on the same site can be expected. At sites such as Vinette, in central New York, Vinette 1 pottery is dominant with only a limited occurrence of early dentate stamped pottery (Ritchie 1944). As already noted, this situation is the opposite of what occurs across the Lake in Ontario and along the St.Lawrence River above Montréal where Vinette 1 pottery is either rare or absent despite the fact that Meadowood preform derived tools in western Onondaga chert are relatively common. This suggests that the distinctive Meadowood lithics were either adopted by Late Great Lakes-St.Lawrence culture people lacking pottery or by people who were already making dentate stamped pottery.

Table 10 compares the frequencies of tool categories from the Batiscan Meadowood site (Levesque et al. 1964), the Constance Bay Point Peninsula site (Watson 1972), and the Thede Saugeen site (Finlayson 1977). The Batiscan site near Trois-Rivières was selected as it was protected from admixture with later occupations by isostatic rebound and subsequent sedimentary processes . Although the sample is small, the 600 BC Constance Bay site on the Ottawa River is one of the few Point Peninsula sites that appears to represent an isolated campsite. The Saugeen Thede site on the Saugeen River in southwestern Southern Ontario was selected over the larger Donaldson site located further downriver as less time depth appears to be represented in the accumulated seasonal debris.

Coefficients of similarity (Brainerd 1951) of the three sites, representing the three complexes that constitute Late Great Lakes-St.Lawrence culture, are as follows: Batiscan/Constance Bay - 127; Batiscan/Thede - 66; and Constance Bay/Thede - 84. In this coefficient, which measures the degree of similarity between any two sets of comparable data, coefficients of 200 and 0 indicate identical versus totally different comparative units, respectively. The Batiscan site is estimated to date around 1,000 BC, the Constance Bay site dendrochronology corrected radiocarbon date is 600 BC, and the Thede site is estimated to date around 250 BC. Probably most regional archaeologists would have suspected that the Point Peninsula and Saugeen sites would have been most similar because of the similarities in pottery characteristics. When the total tool kits are considered, however, a much higher degree of similarity appears between the Meadowood and the Point Peninsula sites despite a time gap of 400 years. Geography, in part, appears to be at work in this instance. The Batiscan and Constance Bay sites are on the same drainage system, albeit 300 km apart. The Thede site, on the other hand, is more than 700 km distant from the Batiscan site and over 400 km from the Constance

Artifact Class	**Batiscan**		**Constance Bay**		**Thede**	
	f	%	f	%	f	%
Pottery Vessels	44	14.3	6	12.0	167	57.0
Projectile points	50	16.3	10	20.0	16	5.5
End Scrapers	118	38.4	12	24.0	26	8.9
Misc. scrapers	35	11.4	-	-	1	0.3
Biface knives	22	7.2	3	6.0	4	1.4
Drills	4	1.3	3	6.0	2	0.7
Abraders	12	3.9	5	10.0	2	0.7
Copper beads	7	2.3	-	-	2	0.7
Copper awls	1	0.3	-	-	1	0.3
Junvenile vessels	-	-	1	2.0	2	0.7
Hammerstones	-	-	4	8.0	45	15.4
Celts	-	-	2	4.0	13	4.4
Linear flakes	3	1.0	-	-	-	-
Strike-a-lights	1	0.3	-	-	-	-
Graphite paintstones	7	2.3	-	-	-	-
Copper fish-hook	1	0.3	-	-	-	-
Copper chisels	2	0.7	-	-	-	-
Choppers	-	-	-	-	5	1.7
Mano	-	-	-	-	1	0.3
Netsinker	-	-	-	-	1	0.3
Gorget blank	-	-	-	-	1	0.3
Chopper preform	-	-	-	-	1	0.3
Ground shale	-	-	-	-	1	0.3
Copper bar	-	-	-	-	1	0.3
Bone bead	-	-	-	-	1	0.3
Galena cubes	-	-	2	4.0	-	-
Stone pottery marker	-	-	1	2.0	-	-
Anvilstone	-	-	1	2.0	-	-
Totals	**307**	**100.0**	**50**	**100.0**	**293**	**99.8**

TABLE 10: COMPARISONS OF TOOL CATEGORY FREQUENCIES FROM MEADOWOOD, POINT PENINSULA, AND SAUGEEN COMPLEX SITES.

Bay site. This site is also located to the west of the Niagara Escarpment, which appears to have functioned as a territorial boundary between eastern and western cultural developments since Middle Great Lakes-St.Lawrence culture times. There is substantial evidence that the Saugeen complex developed out of a regional expression of Middle Great Lakes-St.Lawrence culture and this has obviously had an impact upon the nature of the Saugeen complex tool kit. Batiscan and Constance Bay, on the other hand, appear to have shared a more similar ancestral cultural base, at least as reflected in their respective tool kits. There is also the temporal factor to be considered with the Thede site being significantly later than either the Batiscan or the Constance Bay sites.

An aspect of technology that would have been of importance in Late Great Lakes-St.Lawrence culture is reflected in the organic recoveries from the Boucher site situated just south of the Québec border near the northeastern shore of Lake Champlain in Vermont (Heckenberger et al. 1990; for a more detailed consideration of fabrics and cordage see Heckenberger et al. 1996)). Pertaining mainly to the Adena mortuary complex but with Meadowood mortuary complex elements (see the **Cosmology** section), some of the more than 100 burials at the Boucher site had fragments of bags, bark boxes, textiles, and other organic materials preserved by contact with the numerous copper necklaces placed with the deceased. Among these normally perishable items were the following: a skin bag painted red containing a black rat snake (*Elaphe obsoleta*); another bag containing a timber rattlesnake (*Crotalus horridus*), a black rat snake, pine marten (*Martes americana*), mink (*Mustela vison*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), as well as other animal species; leather thongs; single, 2, 3, and 4 ply plant cordage; woven items involving open simple twining, S weft slant; close simple twining, Z weft slant; open simple and diagonal twining, S weft slant; close wrapped twining, Z weft slant; and braiding, most with 2 ply and 2 spun S twist cordage. Fibres identified were basswood bast (*Tilia americana*) slippery elm bast (*Ulnus rubra*), milkweed (*Asclepias syriaca*), Indian hemp (*Apocynum sp.*), and grass stems. The milkweed and Indian hemp fibres were mainly used for cordage while the remaining plant fibres were used in the production of textiles (Heckenberger et al. 1996: Table 3.2). Animal hair was occasionally incorporated with the twined plant textiles. Textiles appear to have functioned as parts of garments, burial shrouds, and bags. The sophisticated non-loom weaving styles present at the Boucher site are commonly associated with burial sites related to the Adena mortuary complex (Heckenberger et al. 1990: 210).

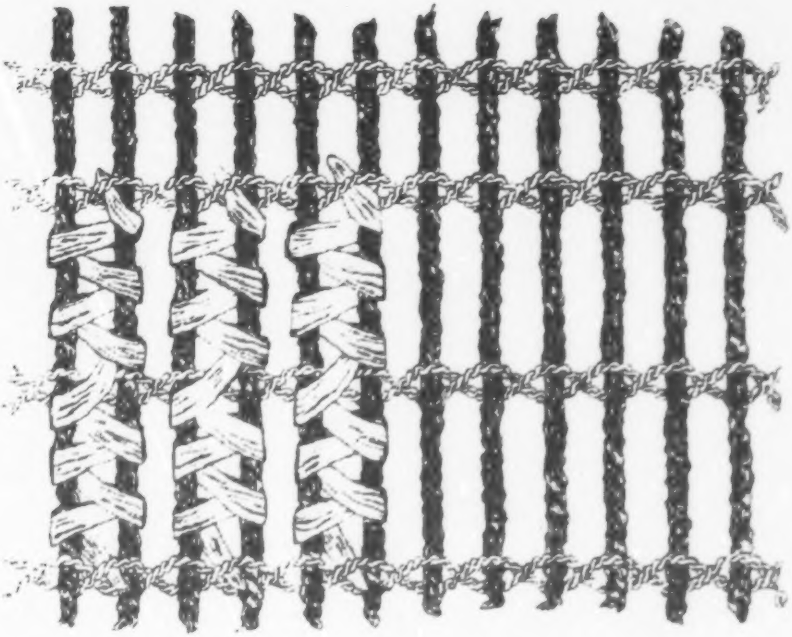


FIGURE 61: A SCHEMATIC VIEW OF OPEN SIMPLE TWINING WITH SUPPLEMENTARY WRAPPED ELEMENT (Reproduced from Heckenberger et al. 1990: Figure 21 with permission of The Carnegie Museum of Natural History, Pittsburg, Pennsylvania).

Subsistence:

It was once assumed that the appearance of pottery vessels marked the introduction of plant domestication and a significant elaboration of culture in northeastern North America. While the expanding archaeological record has discredited this proposition, there is some evidence of an increasing consumption of plant foods and the continuing domestication of a range of seed plants that began in Archaic times. Despite the 2,000 BC domestication of sumpweed (*Iva frutescens*), lambsquarters (*Chenopodium* sp.), and sunflower (*Helianthus annuus*) in eastern North America, "It was not until 2500 to 2000 B.P. that the indigenous domesticates, along with a whole host of other quasi-cultigens and cultigens, became economically important and archaeologically abundant" (Smith 1987: 37). Important oil-rich seed plants were lambsquarters (*Chenopodium* sp.), amaranth (*Amaranthus sp.*), Maygrass (*Phalaris caroliniana* sp.), knotweed (*Polygonum* sp.), and marsh elder (*Iva annua* L.) (Mason 1981: 205). As a rule, the adoption of plant food production appears to have been a slow, erratic, and a regionally specific process. The tropical cultigen squash (*Cucurbita pepo*) has been recovered adjacent to Southern Ontario as early as 500 BC in northern Ohio (Shane 1967) and Michigan (Cleland 1966; Fitting 1972; H. Wright 1964). However, the recent evidence from the Sharrow site in central Maine of squash being present by 4,000 BC (Petersen 1991; Petersen and Sidell 1996) suggests this important cultigen has a much longer history in eastern North America but its poor preservation qualities have obscured the fact. Bottle gourd (*Lagenaria siceraria* Standl.), another tropical cultigen, penetrated the east in the first millenium BC. First domesticated over 7,000 years ago in Central America and Mexico, maize was not introduced into the northern Mississippi Valley until around 200 BC (Riley et al. 1994; Yarnell 1976) and does not appear to have been well established in many of the local economies until the early centuries of the Christian era (Prufer et al. 1965). With reference to wild plant foods, there is some suggestion that the exploitation of nuts, particularly butternut (*Juglans cinerea*), walnut (*Juglans nigra*), and hickory (*Carya ovata*) became increasingly important during Period IV (Spence and Fox 1986). Similar assumptions regarding the use of wild rice (*Zizania aquatica*) (Spence et al. 1984: 20) have not been borne out by flotation studies in the Rice Lake area of southeastern Southern Ontario (Jackson 1977; 1983; Johnston 1984). This, of course, does not necessarily mean that wild rice was not being used but only that direct archaeological evidence is lacking. A site in adjacent Michigan pertaining to the Adena mortuary complex did produce evidence of wild rice (Ford and Brose 1975). It will be recalled that the presence of plant remains in archaeological deposits are usually the product of accidental charring which preserves the remains. Personal experimentation has indicated that some plant materials, like squash seeds, have a tendency to explode into small fragments during the charring process unlike more dense materials like corn kernels.

Important direct evidence for the use of plant foods in Late Great Lakes-St.Lawrence culture comes from recent research at the Dawson Creek site on Rice Lake (Jackson 1983). Problems surrounding the Meadowood and/or Point Peninsula authorship of the pits at this multi-component site have already been discussed. Regardless of the eventual cultural affiliation, pits dated between 1,000 and 600 BC contained charred acorn shell and acorn meat (*Quercus* sp.), raspberry seeds (*Rubus* sp.), some hawthorn (*Crataequs* sp.), blue-beech (*Carpinus caroliniana*), and dogwood seeds (*Cornus* sp.). Of particular note was a single sunflower seed (*Helianthus annus*) recovered from a pit dated to 600 BC. Other pits dating between 600 BC and AD 500 produced acorn shell and acorn meat in some quantity. A feature dated to 200 BC, lacking diagnostic artifacts, contained a single kernel of carbonized corn (*Zea mays*) although there is a possibility that the kernel was intrusive from a later Iroquoian occupation of the site (Jackson 1983: 38-39). Exclusive of the sunflower, plant use at the Dawson Creek site during Period IV reflects the broadly based foraging pattern of the Middle Great Lakes-St.Lawrence culture (Laurentian Archaic) occupation of the McIntyre site on the same lake except for lesser quantities of butternut at the former site (Yarnell 1984).

The Meadowood subsistence pattern in New York State appears to have been the same as that of the preceding Middle Great Lakes-St.Lawrence culture (Ritchie 1965). At the Scaccia site in central New York (Funk 1973: 114) there was no evidence of cultigens and the faunal remains indicated a heavy reliance upon big game such as deer and bear. Evidence of fishing was quite limited. Although it was suggested that the large pits at this site were used for storing nuts, no direct evidence of intensive nut harvesting was uncovered. Charred acorns, hickory nuts, and grape seeds (*Vitis riparia*) did indicate a late summer to early fall occupation. At other New York Meadowood sites, like Riverhaven 2 and Vinette, a combination of hunting and fishing was important (Ritchie and Funk 1973: 346). With reference to fishing, it is probable that women, children, and the aged remained at the base camp to tend nets, fish weirs, and set small game traps while the hunters spread out along the waterways in search of large game and other resources. The suggestion of a major subsistence shift during Period IV from a broadly based economy to one that focused on fishing (Clermont 1978a: 42) is not borne out by the evidence. While Meadowood complex sites are closely associated with streams, marshes, and lakes suggesting that fish were important (Granger 1978: 294), earlier occupations were also associated with these same bodies of water. Such site locations were not only convenient to fish stocks but they also facilitated mobility by water transport. In addition, there is a tendency for large game animals to concentrate along such waterways. In all probability it was the combination of predictable fish stocks and less predictable large game in conjunction with watercraft mobility that were of primary importance. At the Riverhaven 2 site situated in the middle of the Niagara River between Ontario and New York, large and small mammals dominated the faunal remains with very low frequencies of fish, shellfish, and reptiles. Deer were the most common of the large mammals and raccoons the most frequently recovered small mammal. Of the birds, which were relatively common, wild turkey (*Meleagris gallopavo*) was most important. In terms of fish, only the very calorie-rich catfish (*Ictalurus* sp.) was present in any quantity. It is cautioned, however, that cultural factors such as feeding fish carcasses to dogs, storing dried fillets for later consumption, and taboos regarding the treatment of remains, including disposal of bones, could limit or even eradicate archaeological evidence of fish as well as other species of animals.

Given the variable distribution of different food resources that would have been available in the Lower Great Lakes and upper St.Lawrence River region, a common hunting-fishing-gathering economy should not be expected throughout the region. There were also occasional changes relative to earlier subsistence practices. For example, while the Saugeen complex retained the earlier pattern of spring to summer band aggregations on the Lake Huron coast (Kenyon 1959; Ramsden 1976; Wright 1972c), they also established major spring to summer settlements at river rapids in order to exploit spawning fish such as sturgeon (*Acipenser fulvescens*), drum (*Aplodinotus grunniens*), pickerel or walleye (*Stizostedion vitreum*), sucker (*Catostomus* sp.), channel catfish (*Ictalurus punctatus*), and bass (*Micropterus* sp.). Deer, elk, and bear were also taken at this time but berries and nuts, available from summer to fall, are rarely found in the archaeological refuse. In contrast, small mammals, raspberries, elderberries, cherries, dogwood berries, beech nuts, and butternuts recovered from the coastal Saugeen camps indicate July to November occupations (Finlayson 1977). Any suggestion of a Saugeen summer to fall shift from a riverine setting to a coastal one, however, is too simplistic. There is abundant evidence of fishing activity at the coastal camps in the form of stone netsinkers and copper fishhooks and it can be anticipated that the spring runs of fish into the mouths of small rivers and streams were exploited as well as those further upstream in the rapids of the major rivers. The abundance of stone netsinkers on coastal sites but their scarcity on river sites indicates the likelihood of gill net fishing along the coast while quite different fish capturing techniques, such as the use of weirs and traps, were being used in the major rapids of rivers. Unlike the situation in the preceding Middle Great Lakes-St.Lawrence culture, in Saugeen times as indicated by settlement pattern evidence, weirs were being constructed directly in, or immediately below, rapids. This constituted a significant innovation in the harvesting of large numbers of spawning fish at certain seasons of the year. It may even have been accompanied by improved methods of preserving and storing fish. The receding water levels of Lake Huron would have reduced offshore fishing productivity along the coast (Wright 1972c), undoubtedly hastened an early spring settlement shift in emphasis from the coast to the large rivers. Certainly at the river sites, such as Donaldson and Thede, fish were the mainstay of the people with the lake sturgeon being most important but pickerel (walleye), sucker, and channel catfish were also significant (Finlayson 1977: 468). All of the foregoing fish species are early spring spawners except the channel catfish that spawns from late spring to summer (Scott and Crossman 1973). Flotation of cultural soil matrices at the Donaldson site produced evidence that suckers and catfish were more important than earlier less sophisticated recovery methods would have led one to believe (e.g. Finalyson 1977 versus Wright and Anderson 1963). In addition, differences occur in the faunal records of different Saugeen riverine sites. Comparative percentage occurrences by animal class from the Donaldson and the Thede sites are as follows: mammals - 21.0 to 30.0; fish - 76.0 to 45.0; bird - less than 1.0 to 9.0; reptile (turtle) - 2.0 to 14.0; and amphibian - less than 1.0 and 3.0, respectively. It has been suggested that the greater emphasis upon hunting at the Thede site indicates that it may have been a late summer to fall off-shoot settlement from the early spring and summer Donaldson base camp (Finlayson 1977: 575). At the Schoonertown site, on the Nottawasaga River at the south end of Georgian Bay, fish, mainly sturgeon, were caught, processed, and the meat taken elsewhere. This was evident from a ratio of head bones to body parts of 8:1 (Hamalainen 1975). Painted (*Chrysemys picta*), spotted (*Clemmys guttata*), Blanding's (*Emydoidea baldingi*), and snapping turtle (*Chelydra serpentina serpentina*) remains were common at this site as were mussel shells which represented 27% of the faunal sample. In contrast, at the Vandebygaard site on the Ausable River near the southern end of Lake Huron, large numbers of deer and turtle remains suggested two seasonal occupations with the turtles being evidence of a summer residency and the deer of a late fall to winter occupation (Hamalainen 1975).

In terms of plant foods, only raspberry was common on both the Saugeen river and coastal sites. This may indicate some drying and storing of raspberries unlike early summer strawberries that were presumably eaten fresh. Despite the extensive flotation efforts of William D. Finlayson and the presence of manos and metates, suggestive of plant food preparation, there has been relatively little direct evidence of the use of plant foods by the Saugeen people. Of course, many historically documented important plant foods such as edible greens do not survive in the archaeological record.

Around 100 BC a major settlement and subsistence shift took place among the Point Peninsula complex bands of the Trent River of southeastern Southern Ontario. At the Serpent Mounds site, a hillside shell midden measuring 90 by 10 m and 0.3 m deep was recorded (Johnston 1968: 41). Composed of the freshwater mussels *Elliptio complanatus* and *Lampsilis silquoiea*, such shell middens are characteristic of all the major Point Peninsula ceremonial and habitation sites in the area (Ritchie 1949; Spence and Harper 1968: 49). The limited bone found in the shell middens is represented by split deer longbones, fish, and turtle. Both the focus on shellfish and the absence of deer antler and migratory waterfowl indicate that the sites represent summer base camps. Similarily, the Point Peninsula occupation of the Thorah Island site in Lake Simcoe, Ontario, was also characterized by an emphasis upon shellfish gathering and fishing (Ritchie 1965: 209). A similar specialized focus on a limited group of foods has been noted at sites in New York State (Ritchie 1965). The appearance of large shell middens suggests an increasing degree of summer sedentary living by large groups of people. Shellfish gathering, of course, can only be practiced at certain favourable locales and the focus of the occupants of many other sites would have been upon different resources. The Point Peninsula occupation of the multi-component Dougall site at the Atherly Narrows between Lake Simcoe and Lake Couchiching (Wright 1972d), for example, indicates that people were involved in weir fishing like their Middle Great Lakes-St.Lawrence culture predecessors and Iroquoian descendants in the same area.

Tooth-wear studies and the incidence of dental disease (Patterson 1984: 46-47) do not indicate that the diet of Point Peninsula people was significantly different from that of their distant cousins to the west of the Niagara Escarpment. Between AD 100 and 200 at the Le Vesconte site, however, there is an increase in dental cavities raising the possibility that large quantities of high carbohydrate plant foods were being consumed. On the other hand, caries can also be caused by trauma such as tooth chipping rather than being the result of a high carbohydrate diet per se.

The overall importance of nuts to Late Great Lakes-St.Lawrence culture subsistence is not clear. Charred nut shells occur as minor elements in many sites. It is assumed that these people, like their predecessors, would have taken full advantage of the resources available to them, especially during periods of abundance. Trace element studies of strontium in human bone suggest that people during Period IV made extensive use of strontium-rich nuts in contrast to the reliance of their descendants upon strontium-poor corn (Melbye 1984: 128-129). An understanding of the biochemistry involved in food ingestion relative to element concentrations in bone, however, is in its infancy and must be used with a keen awareness of contaminating factors that can lead to erroneous cultural interpretations (Schwarcz 1991).

While subsistence practices within a region of highly diversified food resources can be assumed to have been variable, there is some evidence of increasingly large populations staying in one summer location for increasingly longer periods of time. It can be speculated that longer periods of sedentary existence at Saugeen and Point Peninsula macroband summer base camps was a precondition to the eventual adoption of horticulture. The process only required the introduction of corn with its storage, nutritional, and production advantages. The shift in economy from one based on hunting-fishing-gathering to one concentrating on horticulture, of course, would have involved changes of degree as people continued to exploit a wide range of plant and animal foods. There are reasons to believe that women, as the gatherers, were predominantly responsible for the transformation of these societies from that of hunters to horticulturists who only supplemented their diet with the harvesting of wild foods. In the process, women became the main food-producers with social consequences that will be considered in Period V.

Settlement patterns:

As a rule, Late Great Lakes-St.Lawrence culture people occupied the same hunting and fishing locations as their Middle Great Lakes-St.Lawrence culture ancestors. Base camps were established at favourable fishing locales where the women, children and older members of the band could tend to fish traps and nets, gather plant foods and shellfish, and set snares and deadfalls in the surrounding area for small game. Hunters could range out in watercraft along the waterways in search of big game and other resources such as birch bark, spruce gum, and suitable stone for tools. There were, of course, variations on the preceding generalization. The ultimate goal of all settlement strategies would have been to maintain a complementary balance between sedentary female base camp production and mobile male production. By 100 BC, if not earlier, Point Peninsula people were gathering into increasingly larger, semi-sedentary groups at specific summer ceremonial and habitation centres. The location of such sites along major waterways provided hunting parties with strategic water transport mobility as well as situating the women, children and older people in a favourable base camp locale rich in fish and other resources. It would have been the combination of these two food acquisition activities that provided the necessary sustenance for survival, including the acquisition of winter stores of preserved food. Proximity to the territories of adjacent bands would have also affected how any particular band distributed itself across the landscape. Winter settlement is virtually unknown in the archaeological record but likely consisted of small family groups which dispersed with their stores of preserved food into favourable cold weather locales.

A subsistence strategy focused on resources available from spring to fall would explain why Meadowood, Saugeen, and Point Peninsula complex sites are almost invariably located along bodies of water, whether in Québec (Clermont et Chapdelaine 1982), Ontario (Dailey and Wright 1956; Deller et al. 1986; Finlayson 1977; Johnston 1968; Spence et al. 1984), New York (Funk 1973; Granger 1978, Ritchie 1965), or Vermont (Haviland and Power 1981: Fig.4-7). Such warm weather sites would have been too exposed to the elements during the winter and, given that hinterland sites have not been located with any consistency, it is concluded that the winter family dispersal aspect of the settlement pattern simply has not been identified in the archaeological record. If, as was often done in the Subarctic, family winter camps were situated on frozen creeks that provided convenient winter roadways for toboggan and snowshoe travel then these sites would be flushed away with each spring thaw. Other sites, situated according to complex local winter survival considerations, could well present the searching archaeologist with the proverbial needle in the hay stack situation. It is likely that archaeology will never be able to attain a detailed understanding of all the factors underlying winter settlement strategies. On rare occasions, some aspects of the winter settlement pattern are detectable. In the Ausable River area of Ontario the annual settlement rounds involved Saugeen band gatherings at major rapids to catch spring spawning fish followed by a dispersal to numerous small summer campsites along the coast where a wide range of resources were exploited. Interior sites as far as 25 km from Lake Huron have been interpreted as winter deer hunting camps (Deller et al.

1986) although more information is needed to support this interpretation. In central and western New York, there is little evidence of Meadowood occupations in the 'back country', leading to the conclusion that people stayed throughout the winter on or near the major waterways (Ritchie and Funk 1973: 348). In most instances, however, the large summer base camps would have been too exposed to the elements to permit comfortable winter settlement.

As was the case with **Technology**, it is most convenient to consider the **Settlement patterns** of the three complexes separately.

MEADOWOOD COMPLEX

Few Meadowood habitation sites have been located in the Great Lakes-St.Lawrence region of Ontario and Québec that can be compared to the large Early Woodland sites situated adjacent to Ontario, such as the Schultz site in Michigan (Fitting 1972a) and the Leimbach site in Ohio (Shane 1967). An exception to this is the Batiscan site near Trois-Rivières (Levesque et al. 1964). The Batiscan site extends for more than 300 m along the base of a steep bluff that would have provided protection from north winds. Numerous projectile point base fragments and scrapers suggest weapon repair, hide preparation, and woodworking activities. The poorly preserved faunal record of black bear, moose, beaver, turtle, and freshwater mussels suggests a broadly based hunting and gathering economy. Relative to the season of occupation, species like turtle and shellfish would not have been available in the winter but this, of course, does not mean that the site was not occupied in the winter. Three metre diameter concentrations of debris around hearths suggest probable living floors. A small cemetery, destroyed by wind erosion, was located on the summit of the bluff to the south of the habitation area. There is a possibility that the Batiscan site was occupied, to some extent, on a year-round basis. In contrast to the situation at the Batiscan site, it cannot be assumed on the basis of surface collections of tools regarded as being diagnostic of Meadowood from large multi-component sites like Welke/Tonkonoh in southwestern Southern Ontario that they represented Meadowood base camps, regardless of the inferred season of occupation (Ellis et al. 1988: 13). Even the cultural assignment of such sites to the Meadowood complex can be questioned.

In New York State, Meadowood complex sites are concentrated in the northern and western regions of the state (Ritchie 1965: Figure 1; Ritchie and Funk 1973: 96) with most single component sites being represented by isolated burials or cemeteries. Major base camp habitation sites, like Vinette and Wickham, are multicomponent sites whose occupations could not be effectively separated into single components. Both of these sites are located in close proximity to one another and adjacent to swift water on the Oneida River just below its embouchure from Oneida Lake (Ritchie 1944; 1965). Some superposition of cultural deposits, however, did exist. In the lower levels of the Vinette site, for example, nearly 90 percent of the large pottery sample was classified as Vinette 1 (Ritchie and MacNeish 1949: Figure 42). Settlements in western New York have been classified as base camps, fishing and collecting camps, chert exploitation camps, and mortuary sites (Granger 1978). Within this scheme, the large base camps are regarded as fall to spring occupations characterized by hearths, storage pits, and living floors of concentrated cultural debris. It is doubtful, however, that the largest aggregations of people with a hunting-fishing-gathering economy would occur in the winter. Fishing and gathering camps are believed to have been occupied during the spring and summer. Chert deposits would be periodically visited and such sites usually contain only manufacturing debris. Cemeteries could be either associated with or isolated from habitation sites. In terms of hinterland camps, a detailed stratigraphic study of 5 cave and 18 rockshelter sites in eastern New York and Vermont that contained evidence of occupation ranging from Palaeo-Indian to European contact, produced virtually no evidence of any kind of occupation during Period IV (Funk 1989: 92). This raises the issue of whether fall to winter small hunt camps existed in any numbers. Relative to climatic change, the same study found that the only significant sedimentary break in Period IV occurred around AD 1; possibly correlating with a moist and cool period (Ibid: 106).

Scaccia, a central base camp site in central New York (Funk 1973), is situated on a bluff set back from, and above, the flood plain of the Genesee River and bordered by a swamp and a creek. While the 0.4 ha site is multi-component, the main occupation pertains to the Meadowood complex. Of the 23 pits which can be accurately assigned to the Meadowood complex six were circular and the rest ovate. The circular pits averaged 89 cm in diameter with mean depths of 20 cm whereas the ovate pits averaged 135 by 107 cm and were 43 cm deep. Some of the larger pits may have been used for storage and instances of stratified pit deposits suggest reuse. The fired floors and sides of some pits also suggests their use as ovens. The final function of most of these features, however, was as garbage pits. A tentative oblong house structure, 4.9 by 3.7 m, was suggested by a post mould pattern and may have represented a multi-family dwelling. Despite the fact that the faunal record from the Scaccia site indicated a summer to early fall occupation, the dwelling suggests that it was also occupied in the winter. Another important New York Meadowood complex site is the Riverhaven 2 site on Grand Island in the Niagara River between New York and Ontario (Granger 1978; Kochan 1961). Habitation features associated with the primary point preform manufacturing activity were numerous large oval pits and hearth floors composed of fire cracked rock. More than 95 percent of the abundant chipping detritus, preforms, and other manufacturing

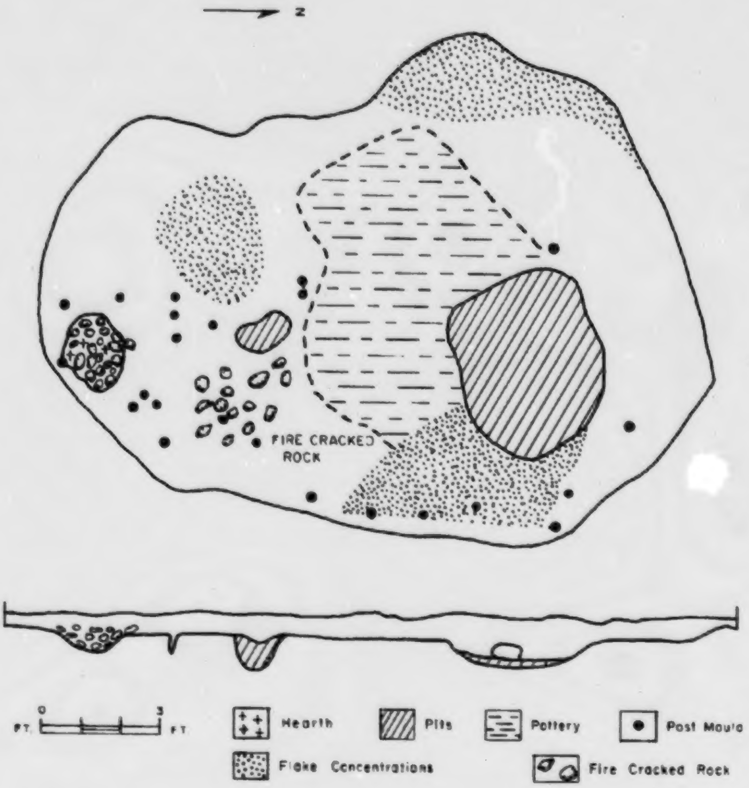


FIGURE 62: MEADOWOOD COMPLEX DWELLING: Demarcated by a hearth associated with fire fractured rock, a large storage pit, post moulds, and the distribution of cultural debris, this multi-family structure uncovered at the Stinking Pond site in western New York would appear to have been sufficiently substantial to have functioned as a winter dwelling. (Adapted from Granger 1978: Fig. 4.10. Drawing by Mr. David W. Laverie)

debris was comprised of western Onondaga chert with the nearest known outcroppings being located 32 km away (Granger 1978: 238). Apparently rough tabular blocks of chert were transported to the site to be reduced to point preforms. In the same area as the Riverhaven 2 site, a 4.7 by 4.0 m ovate structure at the Sinking Pond site, has been recorded (Granger 1978). The dwelling was demarcated by refuse, an incomplete post mould pattern, a hearth, and a storage pit, as well as a cache of chert pebbles and blanks

(Figure 62). Like the tenuous Scaccia site dwelling, its dimensions would suggest a multi-family dwelling.

SAUGEEN COMPLEX

A number of regional Saugeen occupation clusters occur in southwestern Southern Ontario. Areas of concentrated occupation included the Bruce Peninsula of Lake Huron (Finlayson 1977; Lee 1952; 1960), the Long Point region on Lake Erie (Lee 1952), the Thames River in the London region (Wilson n.d), the lower Grand River, the Nottawasaga drainage into Georgian Bay, and the Ausable drainage near the southern end of Lake Huron (Deller et al. 1986).

Saugeen settlement patterns include spring to early summer band gatherings at major rapids to intercept spawning fish. Later in the summer and in the fall elements of the band dispersed in smaller groups and shifted to the coast to fish and gather berries and nuts (Finlayson 1977). Such a riverine-coastal seasonal settlement dichotomy, however, is undoubtedly simplistic for it is apparent that sites were also situated on the coast at the mouths of small creeks in the spring to capture fish. Winter settlement is suspected to have involved family dispersal into the interior (Deller et al. 1986).

The Donaldson site (Finalyson 1977; Wright and Anderson 1963; Black and White Plate XXVII), situated at the first rapids on the Saugeen River 3 km above its embouchure into Lake Huron, covers approximately one hectare of two terraces. Bank erosion has destroyed an unknown portion of the site. Features consist of pits, hearths, natural tree fall depressions subsequently used as garbage pits, a hillside midden 52 m long, two house structures, numerous post moulds, and two small cemeteries. All of the pits appear to have functioned as hearth pits and/or ovens to judge from their fire-reddened floors and sides and an abundance of fire fractured rock. The larger of the two dwellings (Figure 63) was rectangular in outline, measuring 7 by 5.2 m, and was apparently a gabled structure with a central line of large interior posts supporting a ridge pole. A circular hearth pit with an associated mound of heating stones was centrally located towards the entrance. The dwelling faced south by southwest overlooking the rapids. In the back one third of the house numerous post moulds were encountered and the area has been interpreted as the sleeping quarters. House walls had been either rebuilt on a number of occasions or reinforced with additional posts suggesting that the structure had been in use for a considerable period of time. The second house was also rectangular, measuring 5.2 by 3.4 m, but was not as clearly defined as the larger structure. A small fire-reddened hearth floor occurred near the north wall. Situated at the foot of a 1.5 m high terrace, both houses would have been somewhat protected from north winds. As they were also buried under the hillside midden it suggests that the dwellings date to the earlier portion of the site occupation. House dimensions suggest they could have accommodated two families. Despite the faunal and floral evidence which would suggest that the Donaldson site was mainly occupied from spring to early summer, these relatively substantial structures raise the likelihood that some band members over-wintered at the site.

A totally different form of Saugeen dwelling from the foregoing was recorded on Bear's Rump Island off the tip of the Bruce Peninsula in Georgian Bay (Figure 64). This ovate dwelling on an exposed limestone shingle beach was associated with a mound of stone netsinkers brought from the mainland that likely represented the remains of an abandoned gill net. A fall occupation, related to the harvesting of spawning lake trout, is inferred. As the dwelling was situated below the fossil Algoma beach it should date after 500 BC. The quite different forms of the structures at the Donaldson and Bear's Rump Island sites highlight the fact that most people built a range of dwelling types, the forms of which were determined by their purpose.

While the faunal evidence from sites along the Lake Huron coast suggests a shift away from fishing towards hunting by the late Archaic ancestors of the Saugeen people (Savage 1971; Wright 1972c), this evidence only pertains to a local situation and cannot be used as an indication of the overall importance of fish to either Middle or Late Great Lakes-St.Lawrence culture economies. While it has been stated that Saugeen coastal settlements relate to late summer and fall occupations focusing on small game, nuts, and late berry crops (Finlayson 1977), the abundance of stone netsinkers and copper fishhooks on these same sites would indicate that the coastal region was also occupied from early spring throughout the summer and into the fall by certain band members. Though a shift in settlement strategy to the occupation of specific types of riverine locales by Saugeen people can be demonstrated, it would appear that the older spring to fall occupation of the coast was still maintained to some degree.

Situated 16 km up the Saugeen River from Lake Huron on a major rapids the 0.9 hectare Thede site is not only smaller than the Donaldson site but the occupation involved a shorter time span. Features consisted of numerous pits, a single hearth floor, a midden, and a number of tree fall depressions that had been subsequently filled with garbage. Some of the pits were lined with cobbles, like at the Donaldson site, suggesting their use as ovens. The large tree fall depressions at both the Thede and Donaldson sites suggests that both sites were heavily wooded, a fact that would have provided protection from all but eastern winds at the former site and the more desirable warm southern winds at the latter site. The 48 post moulds did not form recognizable patterns (Finlayson 1977).

BLACK AND WHITE PLATE XXVII: A SAUGEEN COMPLEX BASE CAMP The view of the Donaldson site from the opposite bank of the Saugeen River shows the 1960 field camp located above the excavations on a lower terrace. To the far left is Cemetery 1. Cemetery 2 was later discovered under the archaeological camp. The rapids, marked by old bridge pylons, are the first significant fast water upriver from Lake Huron. (Reproduced from Wright and Anderson 1963: Plate I)

Chert tools and detritus from Saugeen sites are mainly Kettle Point or varieties of Onondaga chert depending upon site proximity to the different chert sources. In the case of the Saugeen River sites, where Kettle Point chert dominates, the geological source of the chert is located nearly 150 km to the south on the Lake Huron coast (Janusas 1984). Chert varieties from both southern Georgian Bay and the northshore of Lake Erie have also been recognized (Finlayson 1977) as well as a small amount of Bayport chert from Saginaw Bay, Michigan. A cache of 112 preforms of mixed Port Franks (Kettle Point) and Lake Erie cherts was also uncovered (Ibid: 257-258). The locations of the major chert sources approximates the distribution of Saugeen bands in southwestern Southern Ontario.

On the middle Thames River to the southwest of London, Ontario, it has been proposed that the partially stratified Boresma site represents a riverine adaptation with

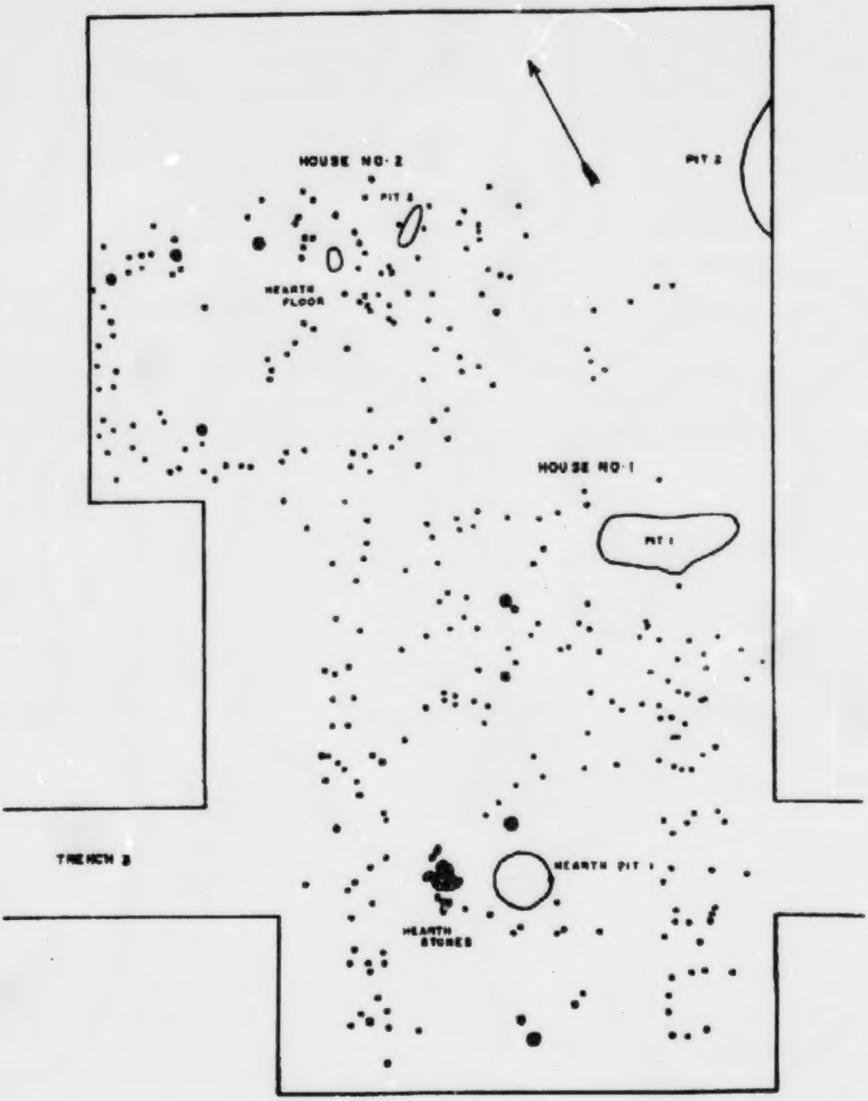

HOUSE NO·2
PIT 3
PIT 2
HEARTH FLOOR
HOUSE NO·1
PIT 1
TRENCH 3
HEARTH PIT 1
HEARTH STONES

FIGURE 63: SAUGEEN COMPLEX BASE CAMP DWELLINGS The floorplans of these two dwellings were demarcated by numerous post moulds and, in the case of the larger dwelling, by an interior hearth feature. The line of large medially located posts suggest that the larger house had a gabled roof. Dimensions of both dwellings indicate the likelihood of occupation by at least two families (Reproduced from Wright and Anderson 1963: Fig.4)

considerable residential stability (Wilson n.d.). A proposed absence of seasonal settlement on Lake Erie 35 km to the south cannot be properly evaluated given the fluctuating water levels of the Lake at this time (Calkin and Feenstra 1985: 164). Technological differences between the Boresma site and the more northerly Saugeen complex sites points to the likelihood of considerable regional variability within the Saugeen complex. Pottery decoration on the Thames River sites, for example, tends to concentrate on the upper rim more so than to the north. Pottery attribute trends through time, however, are common to a wide area. Boresma site features are hearth floors, circular pits, refuse filled tree-falls, and a maze of post moulds that formed no discernible pattern.

Although sites in the Nottawasaga River area at the southern end of Georgian Bay have not been adequately described, they have been tentatively assigned to the Saugeen complex (Spence et al. 1990: 148). The occupation of the Schoonertown site on the Nottawasaga River was clearly related to the processing of fish, particularly sturgeon, for consumption elsewhere. Freshwater mussel gathering was also of unusual importance and in this respect resembled Point Peninsula complex sites to the east (Conway 1975; Hamalainen 1975).

POINT PENINSULA COMPLEX

The Point Peninsula occupation of Rice Lake appears to have involved a number of bands, each with a large spring through fall base camp associated with ceremonial centres marked by burial mounds (Johnston 1968; Ritchie 1949; Figure 65; Spence et al. 1984: 122-123). Rice Lake is actually a widening in the Trent River and, thus, part of a convenient water transportation route connecting the eastern end of Lake Ontario with the southern end of Lake Huron. Base camp activities at the Rice Lake sites involved mainly fishing and gathering, especially the collecting of large quantities of mussels. Around November, people would have moved inland for the winter in dispersed family groups which supplemented their stored food stocks with hunting. As most of the large summer sites also contain Middle Great Lakes-St.Lawrence occupations (Ritchie 1949), this particular settlement pattern appears to have been a long established one in the area. The major occupations, however, pertain to the Point Peninsula complex. An abundance of western Onondaga chert possibly represents an exchange product for furs and native silver from the east (Spence et al. 1979: 120). Silver, obtained in a pure form at Cobalt in eastern Northern Ontario, is relatively common in the Rice Lake burial mounds and has been recorded from sites in New York and Ohio using trace element analysis (Michael W. Spence, University of Western Ontario: personal communication).

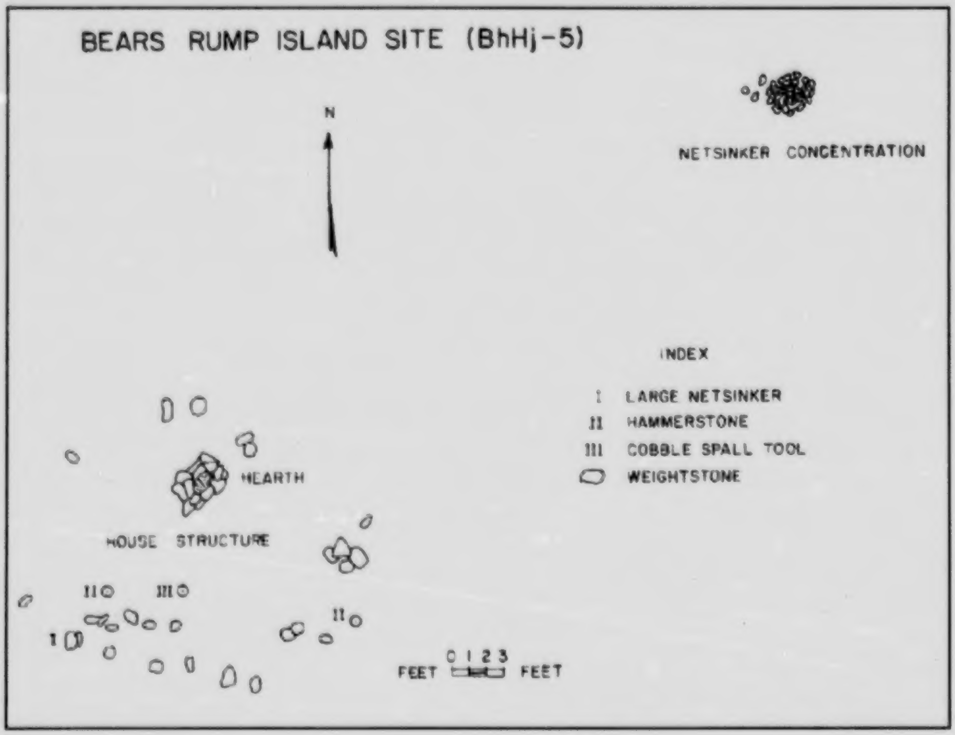

BEARS RUMP ISLAND SITE (BhHj-5)
N
NETSINKER CONCENTRATION
INDEX
I LARGE NETSINKER
II HAMMERSTONE
III COBBLE SPALL TOOL
WEIGHTSTONE
HEARTH
HOUSE STRUCTURE
0 1 2 3
FEET FEET

FIGURE 64: A SAUGEEN COMPLEX FISH CAMP TEMPORARY DWELLING Built on an exposed rough limestone shingle beach on an island in Georgian Bay, the dwelling was demarcated by large weight stones which would have held the edge of the skin or bark covering in place. A substantial flagstone hearth was situated in the northern end of the structure. The dwelling was associated with a mound of more than 100 stone netsinkers, probably the remains of a discarded gill net. Both the netsinkers and the large 6 kg notched stone anchor on the southeastern edge of the dwelling were manufactured from sandstone cobbles foreign to Bear's Rump Island and would have been brought from the mainland. (J.V. Wright, 1976 National Museum of Man archaeological survey of Georgian Bay. Drawing by Mr. David W. Laverie)

The intermixture of Middle and Late Great Lakes-St.Lawrence cultural deposits found on Rice Lake is also characteristic of sites along the Upper St.Lawrence River (Clermont et Chapdelaine 1982; Dailey and Wright 1956; Dekin and Ewing 1973) although, below Montréal, Point Peninsula sites become increasingly scarce (Clermont et al. 1992: Tableau 4.5). At most of the sites in Ontario, evidence of the Meadowood complex is either absent or limited, a fact noted years ago by William A. Ritchie (1949).

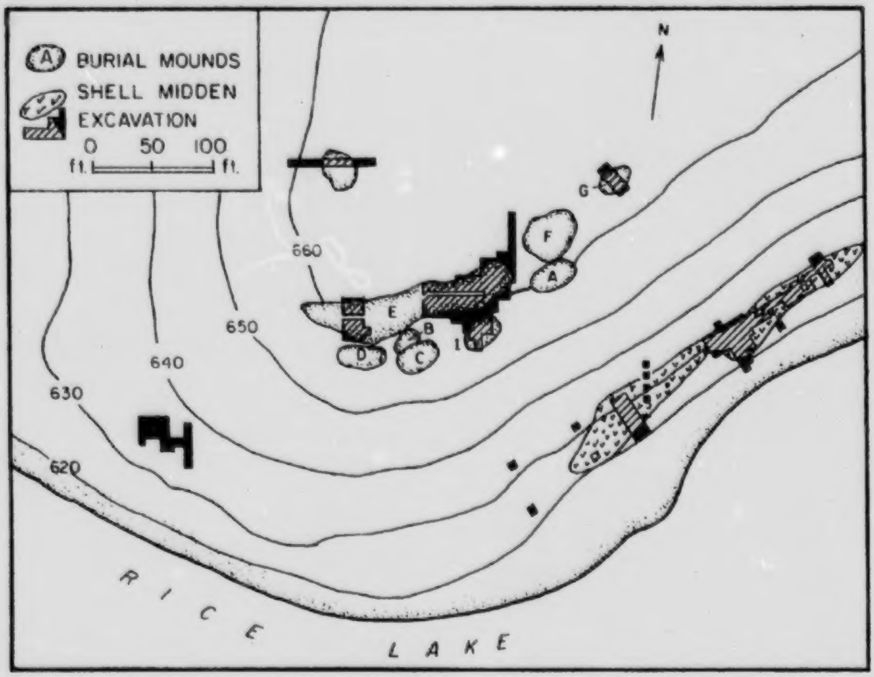


FIGURE 65: A POINT PENINSULA CEREMONIAL AND HABITATION SITE The map of the Serpent Mounds site shows the relationship of the burial mounds to the habitation area represented, in part, by an extensive shell midden. The archaeological excavation units are also shown. (Adapted from Johnston 1968: Fig.2. Drawn by Mr. David W. Laverie)

A similar pattern of settlement involving the repetitive occupation of the same sites occurred in adjacent New York (Ritchie and Funk 1973: 349). The apparent absence of inland fall and winter sites, however, has prompted the suggestion that some sites, such as Kipp Island, were occupied year round (Ibid: 354). Situated on a drumlin island on the Seneca River where it traversed a major marshland known as the Montezuma Swamp, this major habitation site was also associated with an adjacent cemetery and a burial mound (Ritchie 1944: 132). Certainly the density of post moulds at the Kipp Island site suggests the probability of substantial house structures that one might expect in a winter habitation. The proposed circular and rectanguloid house outlines, however, are not convincing given the complex maze of posts and the somewhat erratic distribution of interior features (Ritchie 1965: Fig.7, 246).

Recent Ontario Ministry of Transportation archaeological salvage work at the Georgian Bay embouchure of the Severn River, a part of the Trent River system, determined that the Point Peninsula sites in the area contained significant amounts of Trent River and Balsam Lake cherts suggestive of seasonal population movements from the east to Georgian Bay. Such a location on the Bay would have strategically situated people relative to contacts and trading relations to the north, the southwest, and the west (Dodd n.d.). An apparent absence of Saugeen complex materials from these sites might suggest that the demonstrable Saugeen and Late Western Shield culture (Laurel) contacts were made via the Bruce Peninsula to Manitoulin Island rather than along the east coast of Georgian Bay. On the other hand, Late Western Shield culture pottery was apparently associated with a Saugeen complex site at the south end of the Bay (Conway 1975: 5) and a Saugeen pottery sherd was identified on a Rice Lake site at Cameron's Point (Spence and Harper 1968: 48). Although the foregoing relationships are admittedly tenuous, they do suggest there is some archaeological basis for detecting contacts between different societies and cultures by studying the distributions of their distinctive pottery styles.

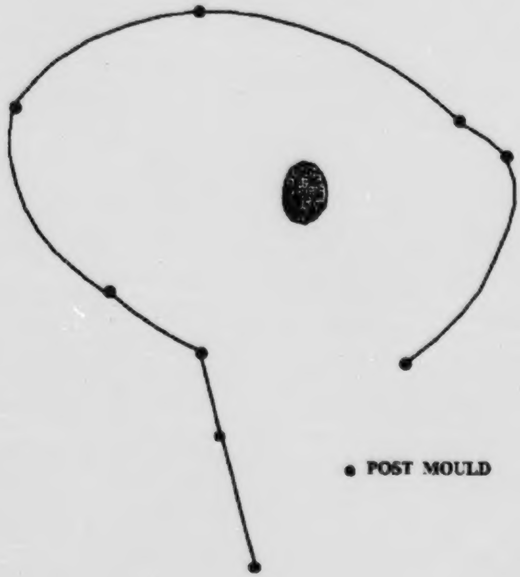


FIGURE 66: POINT PENINSULA COMPLEX DWELLING This flimsy, single family dwelling uncovered during the salvage excavation of the Ault Park site on the St.Lawrence River was likely a warm weather structure. (Electronically drawn from J.V. Wright n.d. (a) by D.M. Wright.)

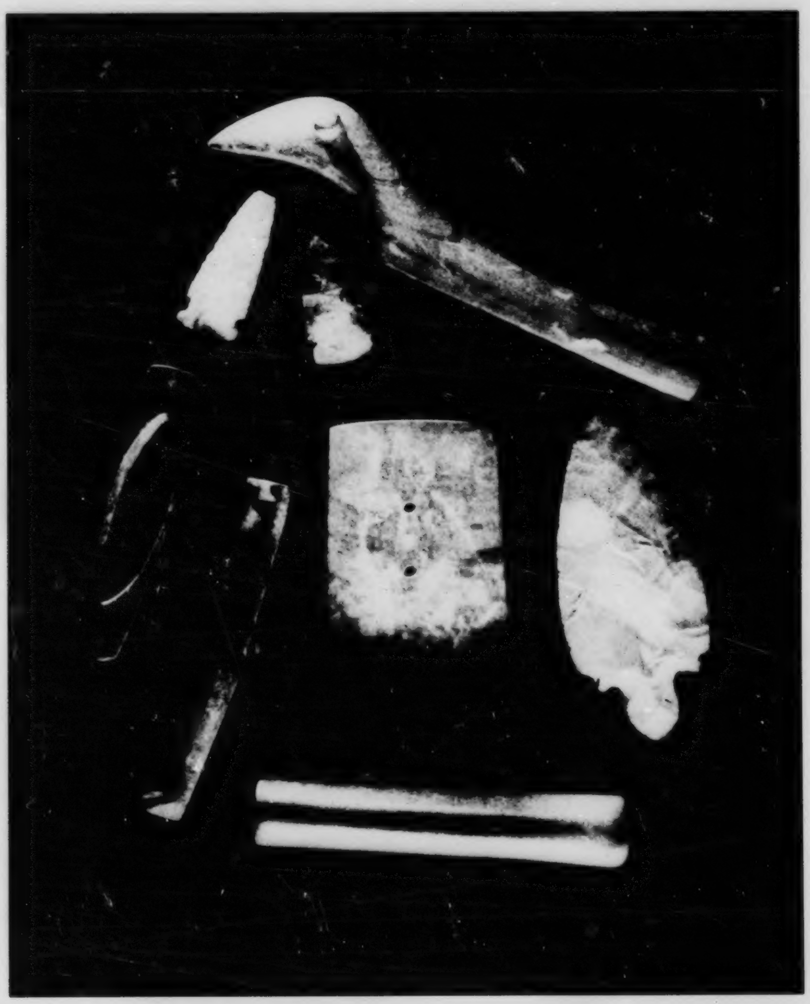
The only clear example of a Point Peninsula dwelling was uncovered by J. Norman Emerson at the Ault Park site, overlooking the Long Sault Rapids of the St.Lawrence River upriver from the city of Cornwall in Ontario. Posts demarcated a flimsy ovate structure measuring 3.7 by 2.3 m with a central pit hearth (Figure 66). Generally, the posts were spaced 1.5 m apart and all posts, ranging from 5 to 6.4 cm in diameter, were encountered at the same depth. The dwelling faced south with overlapping house walls forming the entrance and providing protection to the entrance from an east wind. The Ault Park site has been dated to around 400 BC (Spence et al. 1990: 127) and the structure is quite similar to an approximately contemporaneous dwelling at the Asmus 3 site in northern Ohio (Stothers and Abel 1993: Fig.14c).

The suggestion that there was a major difference between the settlement patterns of Late and Middle Great Lakes-St.Lawrence cultures as a result of an increasing sedentary way of life is not, in most instances, supported by the evidence. There is, however, a gradual increase in the size of the warm weather base camps. Further, the suggestion that there was a population decline throughout much of northeastern North America between 1,500 and 500 BC (Funk 1983: 363) is questionable given the limited archaeological knowledge for much of this time period. An impression of reduced populations may be the result of comparing 1,000 years of Woodland garbage to 2,500 years or more of Archaic garbage sans pottery. Beyond adapting to local environmental changes that impacted upon food availability and applying new innovations, like trapping fish in fast water, there does not appear to have been any widely based significant subsistence changes reflected in settlement patterns. The ability to efficiently store food for winter was almost certainly present by Middle Great Lakes-St.Lawrence culture times. It appears that a flexible and seasonally balanced hunting and gathering pattern maintained itself as the economic base until the introduction of horticulture. People supported themselves for thousands of years with a settlement strategy involving the location of major spring to summer base camps at favourable fishing and gathering locales followed by family dispersal in the winter to small hunting camps supported by stored foods. Within this system women were food producers in the base camp setting while men ranged out along the waterways in search of big game. The combination of the two production systems, sedentary female and mobile male, was the foundation of the economy.

Cosmology:

Ceremonies associated with death allow people to express social cohesion and to reinforce views regarding the nature of the cosmos and eternity. Burial ritual provided other supports to society by demarcating the boundaries of the local band territory with the places of burial and maintaining band solidarity. Perhaps most important, the ceremonies associated with death established a relationship between the living and the dead. It appears that, in combination with the adoption of pottery and the bow and arrow, the mortuary systems have detracted attention from much of the cultural continuity emanating from the preceding Middle Great Lakes-St.Lawrence culture. Except for the late portion of Period III, archaeological evidence from Period IV has generated more migration and population replacement hypotheses than any other period in the region's pre-European history. Two aspects of mortuary ritual can be identified. First, there is the local Meadowood mortuary complex with its strong Middle Great Lakes-St.Lawrence culture roots which are also present in the early Point Peninsula and Saugeen complexes. Second, there is an early Adena mortuary complex and a related, but later, Hopewell mortuary complex from the Ohio Valley which exerted influences on the burial ritual of Late Great Lakes-St.Lawrence culture for approximately a thousand years. Characteristic of the Meadowood mortuary complex was its frequent use of the same cemeteries or 'sacred places' as was the case with its Middle Great Lakes-St.Lawrence culture predecessors. This pattern appears to have been, in large part, discontinued with the appearance of the Ohio Valley mortuary complexes. In this instance, however, subsequent people in Period V continued to use many of the burial sites for the same purpose.

The Meadowood mortuary complex developed out of late Middle Great Lakes-St.Lawrence culture where mortuary practices became increasingly elaborate around 1,500 BC with the adoption of traits centred in what is now the midwestern United States. As outlined in Chapter 15, this late Archaic mortuary complex, known as Glacial Kame (Cunningham 1948), is characterized by certain grave offerings, particularly marine shell gorgets and beads, copper adze/gouges, awls and beads, and unmodified galena (lead sulphide) cubes. Cemeteries, removed from habitation sites, occur mainly along the northern half of the Indiana and Ohio border into southern Michigan, across Southern Ontario and into northern Vermont (Tuck 1978: Fig.1). Single graves or small cemeteries containing multiple or single cremated, flexed, extended, and bundle burials were generally provided with abundant red ochre and an array of offerings (Jury 1978; Ritchie 1949; Spence and Fox 1986). A Glacial Kame complex site in Ontario, the Hind site, has been dated to around the beginning of Period IV (Donaldson and Wortner 1995; Spence and Fox 1986). The late position of the Hind site near London is also suggested by the presence of such atypical Glacial Kame traits as a stone blocked-end tubular pipe, birdstones, marginella shell beads from the east coast, two and three hole ground slate gorgets, and caches of projectile points, preforms and drills. In many respects, the Hind site assemblage is transitional to the Meadowood mortuary complex. The site is contemporary with a related western mortuary complex called Red Ocher which also spanned the Archaic and Woodland periods. The Andrew site in Michigan,



COLOUR PLATE XVI: LATE GREAT LAKES-ST.LAWRENCE CULTURE GRAVE OFFERINGS With the exception of the two side-notched Meadowood type arrowheads, all of the illustrated objects are generally only found in graves. This suggests that such offerings held a particular symbolic significance associated with death and the afterlife. The polished slate birdstone at the top and probably the barstone on the lower left may represent the last vestiges of the spearthrower weight. The function of the so-called boatstone on the extreme left is unknown. Typical of the Meadowood mortuary complex are the Meadowood points, the birdstone, and the two-holed polished slate gorget. Typical of the Adena mortuary complex are the boatstone, the blocked-end tubular pipe at the bottom, and the barstone. The large stemmed biface blade to the right is more typical of the Red Ocher mortuary complex but can also occur in the Meadowood mortuary complex. (Reproduced from Wright 1972: Colour Plate III) for example, shares many traits with the Meadowood mortuary complex (Ritchie 1965: 199).

The temporal overlap and similarities of the Glacial Kame, Red Ocher, Meadowood, and, to a lesser extent, Adena mortuary complexes has resulted in considerable classification confusion. It is appropriate to regard the foregoing complexes as temporal and regional expressions of a broadly shared set of mortuary practices. In this respect, the Glacial Kame and Meadowood mortuary complexes, with their abundant use of red ochre, the placement of cemeteries on east facing hills, and the excavation of deep graves, are only one regional expression of a general mortuary pattern in the Great Lakes region that shared many traits with other eastern burial complexes such as the Middle Maritime and Susquehanna Archaic cultures. Attempts to explain this widespread flourescence of mortuary practices in eastern North America as a product of social stress stemming from climatic change (Haviland and Power 1981: 132) do not appear to be tenable. Climatic evidence does not support such a proposition (Funk 1989) and, further, similar elaboration of mortuary complexes were taking place across much North America at the same time.

MEADOWOOD MORTUARY COMPLEX AND EARLY POINT PENINSULA MORTUARY PRACTICES

Two cemeteries in New York, near the St.Lawrence River, have provided much information on the Meadowood mortuary complex (Ritchie 1955). The Muskalonge Lake and Red Lake sites are situated on sand ridges nearly 5 km apart with each site containing a number of discrete cemeteries. This pattern is similar to paired Adena mortuary complex cemeteries at both the northern and southern ends of Lake Champlain in Vermont that are each situated 4 km from one another (Loring 1985: 105). Associated with the Muskalonge Lake and Red Lake cemeteries, but at a higher elevation, were large crematories marked by masses of fire fractured rock, some retaining in place cremations, but most containing evidence that the cremated remains were, for the most part, removed for final burial in one of the cemeteries. At the Muskalonge Lake site, graves from 1.5 to 0.3 m deep were located along the eastern half of a knoll. The graves contained cremations and articulated and/or bundle burials with the unburnt burials being largely dissolved by the acid soils. Some of the bodies were apparently wrapped in bark. Many of the offerings to the deceased had been incinerated in the crematory along with the remains and were then retrieved for placement in the final grave. In addition to the frequent use of red ochre, a wide range of offerings were represented including large quantities of specialized preforms of western Onondaga chert, frequently called cache or mortuary blades, as well as adzes, scrapers, fire making kits consisting of a nodule of iron pyrites and a chert striker, discoidal shell beads preserved by contact with copper, a slate gorget, etc.. Of particular interest was the occurrence of paired native copper celts, marine shell discoidal beads, and galena nodules; all characteristic traits of the ancestral Glacial Kame mortuary complex. A concentration of habitation debris 1.8 m in diameter, that included a Vinette 1 pottery vessel, may represent a dwelling associated with the burial ritual (Ritchie 1955: 21). At the Red Lake site, 10 of the 14 crematories were clustered within an area 15 m in radius. The crematoria ranged from 10.7 to 2.4 m in diameter and consisted of a concentrated layer of fire fractured rocks resting on a floor of oxidized sand testifying to intense heat. One crematory contained the in place cremations of two adults and a child as well as evidence of a fourth cremation that had been removed. As the cremations in the cemeteries occurred as compact units, they would have been originally enclosed in an organic wrapping or bag. In one instance, a cremation and a bundle burial had been placed together. Variability in treatment of the remains of the deceased may have been based on situational ritualistic requirements related to the individual or to the circumstances of the death or simply the wishes of kinsmen. Burials were occasionally interred at different levels within a single grave shaft. The possibility of a ceremonial hearth being associated with the graves was also recorded (Ritchie 1955: 32-33).

Many of the burial practices reported from the Muskalonge Lake and Red Lake sites are similar to those encountered at the two Point Peninsula complex cemeteries of the Ault Park site on the Ontario side of the St.Lawrence River (Wright n.d. (b)). Although the cemeteries pertain to the early Point Peninsula complex, they are discussed here to emphasize the relationship between the mortuary practices of the Meadowood mortuary complex and the early Point Peninsula complex. A few graves at this site can also be assigned to Middle Great Lakes-St.Lawrence culture. Except for the absence of the very large caches of western Onondaga chert preforms, the specific burial practices of the early Point Peninsula Ault Park site compare closely to those of the Meadowood mortuary complex. As Vinette 1 pottery and the characteristic Meadowood preform technology occurred in the habitation debris along with the dominant Point Peninsula materials, it could be suggested that a Meadowood occupation was represented at the site and that the cemeteries may pertain to that occupation. Pottery fragments in a number of the graves, however, indicate that both cemeteries can be assigned to the Point Peninsula complex. It is worth noting that the date from a 'classic' Meadowood mortuary complex cemetery at the Pointe-du-Buisson site less than 70 km down river from the Ault Park site, was contemporary with the Point Peninsula complex dates from the latter site (Spence et al. 1990: 127). A similar association of Point Peninsula complex pottery with a Meadowood mortuary complex burial pit was recorded at the Pointe-du-Buisson site but was discounted as being unrelated to the feature (Clermont 1978: 12-13). Both Ault Park cemeteries had associated small ceremonial hearths at the same level as the graves. These features consisted of small pits, consistently 46 cm in diameter and devoid of anything other then very fine charcoal 'soot'. Because of the number of shared mortuary traits and the overlap in time, the early Point Peninsula mortuary practices have been subsumed under the Meadowood mortuary complex. Additional discussion of the Ault Park cemeteries is included in the section on **Inferences on society**.

Within the Meadowood mortuary complex there is considerable variability in practices and, in this respect, the complex does not resemble a burial cult with its programmatic adherence to rigidly prescribed procedures. Bodies were cremated or buried intact or in bone bundles retrieved from temporary burial places, some cremated remains were left in the crematory but most were partially retrieved for grave burial in the cemetery, the use of red ochre was variable, concentrations of western Onondaga chert preforms were 'killed' by either fire or percussion or were left intact but in association with 'killed' specimens of other tool varieties, and the range of grave offerings and quantities were quite different by grave lot. Although there is only a limited amount of skeletal material for which age can be determined, there does not appear to be any status differences, relative to age or gender. It is assumed that egalitarian and individualistic practices prevailed under the general administration of respected elders. The 'killing' or breaking of grave offerings is an animistic practice intended to release the spirit of the artifact in order for it to accompany the soul of the deceased. In animism all things, animate and inanimate, possess souls or spirits; the belief system is the oldest and most widespread cosmological concept in the history of human beings. This fundamental belief system appears in the Western Hemisphere with its occupation by Palaeo-Indian culture (Wright 1995: 46-49).

The only unquestionable Meadowood mortuary complex site in Southern Ontario is the Bruce Boyd site on the northshore of Lake Erie near Long Point (Spence et al. 1978; Spence and Fox 1986). Twenty-three burial pits on a small east facing knoll contained cremation and bundle burials, some accompanied by extra skulls. Offerings consisted of preforms, Meadowood side-notched points, trapezoidal ground slate gorgets, galena, a copper axe, bracelets and beads, fire making kits, and red ochre as well as other items. None of the grave offerings were 'killed'. It is cautioned that the corner-notched points and most of the copper items from this site may pertain to earlier Archaic burials (Michael W. Spence, University of Western Ontario: personal communication). On the other hand, while Period III and IV people frequently used the same burial areas, the occurrence of some so-called 'Archaic' and 'Woodland' artifacts in a cemetery could simply reflect a transitional stage of development and thus represent valid associations. A hearth was possibly associated with the burial rituals at the Bruce Boyd site as were two ochre deposits and two features that contained offerings but no human bodies (Spence et al. 1990: 132). Most graves lacked red ochre and there was only a single instance of cremation. One dismembered and incomplete adult had an elaborate food offering placed on the head consisting of the bones of deer, dog or wolf, a possible woodchuck, ground squirrel, beaver, grey fox, rodent (?), turkey, and eight species of fish (Michael W. Spence, University of Western Ontario: personal communication). As a number of the graves cut into one another, the cemetery was obviously used over an extended period of time. In this respect, it would be likely that the locations of individual graves were marked in some manner and it is speculated that the grave excavations that cut into earlier graves, a common feature in Glacial Kame, Meadowood, and subsequent mortuary complexes, may be the product of a natural wish to bury kinsmen together.

At the Meadowood Batiscan site in Québec (Levesque et al. 1963), a small cemetery was situated on the summit of a southeast facing ridge a short distance above and to the southwest of the habitation area. The cemetery had been destroyed by wind erosion that exposed the following objects: cremated human remains; a necklace of small ovoid copper beads; copper stained human teeth caps indicative of in-flesh or bundle burial; and two large mortuary biface knives fractured by fire. More informative was the small cemetery at the Pointe-du-Buisson 5 site on the St.Lawrence River above Montréal (Clermont 1978). Overlooking rapids on an east facing point, the cemetery consisted of three burial pits dated to around 500 BC. One of the graves had been capped with flagstones and contained the cremations of an adult and two infants along with the incinerated remains of polished trapezoidal slate gorgets, birdstones, adzes, specialized preforms of which 20 percent had been subjected to fire, and Meadowood side-notched points and end scrapers manufactured from bifacial preforms. All of the chert was western Onondaga from the west end of Lake Ontario. Miscellaneous items from the graves included drills, a stemmed point, adzes, fragments of Point Peninsula pottery whose association is questioned (Ibid: 13), a pottery pipe fragment, worked bone items, and a wide range of carbonized animal remains including moose, bear, dog, sturgeon, otter, and birds. For one grave the sequence of burial events involved the reduction of the bodies to skeletons in a primary burial after which the bone bundles and the offerings were cremated, the residue gathered up and placed 'pel-mel' into the grave pit with red ochre, and the grave covered with flat rocks (Clermont 1978: 14). The easternmost known Meadowood complex habitation and burial site in Québec is the 900 BC Lambert site on the southshore of the St.Lawrence River just above Québec City (Chrétien 1993). An exceptional characteristic of the Lambert site burial was that it consisted of a constellation of discrete features. To the west of the cremation was a pit containing red ochre and to the east, a hearth. Immediately north was a hearth containing 170 fire fractured preforms. While all of the specialized preforms from the one feature had been manufactured from Onondaga chert, 99 percent of the other debitage from the site was of local origin. Two pottery vessels, one Vinette 1 and the other an early Point Peninsula variety, were recovered as well as biface knives, drills, strike-a-lights, projectile points, end scrapers, and retouched flakes. A similar contrast between the use of imported Onondaga chert for the specialized preform derived tools and local cherts for other implements was noted at the Batiscan site (Levesque et al. 1964).

The following traits are characteristic of the Meadowood mortuary complex, including early Point Peninsula burial practices: cemeteries located on high and often isolated sand knolls, generally facing east towards the rising sun; graves occurring in small clusters of 4 to 30 individuals; cremation, bundle, extended, and skull burial; frequent cremation of both bodies and grave offerings; remains either left in the crematory or removed to a cemetery for final burial; the placement of the remains of one or more individuals in the floor of a pit covered with red ochre; grave offerings, occasionally including dogs, usually present and often 'killed' by either fire or a blow; an emphasis upon fire as witnessed by the frequency of cremation and fire making kits of iron pyrites and chert strikers; a wide variety of grave offerings suggesting individual inclinations rather than an adherence to any external prescribed formulae - a characteristic also reflected in the variable use of red ochre; evidence of cremation of both green and dry bone as determined by fracture characteristics indicative of the use of temporary scaffold burials or charnel houses; and the participation in a trade network that stretched from the east coast (marine shell beads), Lake Superior (native copper), and the Niagara region (western Onondaga chert) (Ritchie 1955; Ritchie and Funk 1973). In order of frequency the most common grave offerings are specialized bifacial preforms, projectile points, scrapers, polished slate gorgets, and fire making kits or parts of them. Early evidence of theAdena mortuary complex appears sometimes in association with typical Meadowood mortuary complex traits. This is apparent at sites like Cuylerville in New York (Ritchie and Dragoo 1960: 29-34) and the Boucher and Swanton burial sites in northern Vermont (Haviland and Power 1981: 119-120). The Adena mortuary complex retention of elements of the earlier Meadowood mortuary complex supports the opinion that the Ohio Valley traits were adopted by local people and were not the result of a population intrusion of Ohio Valley migrants. This does not exclude, however, the possibility of Ohio Valley priests being responsible for administering the introduced religious rites.

ADENA MORTUARY COMPLEX

The local Meadowood mortuary complex and the Adena and Hopewell mortuary complexes that emanated from the Ohio Valley were significantly different phenomenon. The Meadowood mortuary complex was a regional version of a pattern of burial ritualism that was widespread in late Archaic times. In contrast, the Adena mortuary complex represented an intrusion of mortuary concepts into Late Great Lakes-St.Lawrence culture that partially replaced the indigenous mortuary system. Certain shared elements, such as cremation of bone bundles representing individuals who had been initially placed in a charnel house, scaffold, or temporary grave, the use of red ochre, 'killing' of some grave offerings, large mortuary biface knives, ground slate gorgets, birdstones, unmodified galena cubes, and copper beads pertain to an earlier widespread horizon of traits originating in the late Archaic. A decidedly different feature was the variety of grave offerings characteristic of the Adena mortuary complex. Offerings followed a prescribed formulae, not only in the Lower Great Lakes and Upper St.Lawrence region but elsewhere in eastern North America. This relatively rigid adherence to a prescribed form of ritual suggests something more than simply the diffusion of a set of mortuary practices from the Ohio Valley. Indeed, many of the grave offerings are not only typical of the Ohio Valley but were manufactured from Ohio Valley materials such as various cherts and a distinctive variety of limestone called pipe stone. It is speculated that the Adena mortuary complex was a religious cult, likely presided over by Ohio Valley priests and/or local shamans following Ohio Valley based procedures. A number of researchers (Loring 1985: 104-105; Spence et al. 1990: 142; Turnbull 1986: 21-22) have questioned the use of the term 'cult' to explain the spread and maintenance of Ohio Valley mortuary traits throughout eastern North America. 'Cult' is used here to describe "a system of religious worship" which seems an appropriate designation for the widespread sharing of traits in the Adena mortuary complex. While there is no question that the Adena mortuary complex participated in the earlier Archaic trade network in copper, Atlantic marine shell, and exotic stone (Heckenberger et al.1990: 178), it is another matter to suggest that the complex was simply based upon earlier local Archaic ceremonialism. There has been disagreement regarding the definition of a cult as well as a tendency to take an either/or position regarding religious versus economic explanations of phenomenon like mortuary complexes (e.g. Granger 1978a: 99; Loring 1985: 106). Here, religious practices and economics are viewed as not being exclusive of one another. If the basis for the distribution of specific exotic items over enormous spans of space and time was solely economic then one must pose the question; why do the exotics always occur in graves and not in the debris of the habitation sites? Taking such objects out of circulation by burying them with the deceased and thus retaining the demand and the trade is an insufficient explanation.

The name 'Adena' comes from a local archaeological culture in the Ohio Valley. It is followed in the Ohio Valley by a related culture called 'Hopewell' (Johnston 1968a). With reference to the Hopewell mortuary complex, however, its influence on people in what is now Canada was so attenuated and geographically restricted compared to the Adena mortuary complex that its description as a cult would be inappropriate. An attempt has been made to trace the meaning underlying Adena-Hopewell ceremonialism to the oral traditions of present native people (Hall 1979). Hall starts from the premise that many native beliefs relate to the aid that the dead can provide to the living. If, for example, the copper or silver conjoined tubes of the Hopewell mortuary complex, called pan pipes, were, indeed, musical instruments, as would appear to be the case (Young 1976: Figure 5), then historical documentation would suggest that they may have been related to ceremonies involving animal fertility. There is also some suggestion that elements of Hopewellian ceremonialism represent the re-enactment of the widely held creation myth whereby an animal called the Earth Diver, under the direction of the Creator, succeeds in retrieving mud from the bottom of a primeval sea so that the Creator can make the World. As noted in Chapter 15, possible archaeological evidence of the Earth Diver creation story existed in the Glacial Kame mortuary complex of Middle Great Lakes-St.Lawrence culture and elsewhere.

Adena cultural roots in the Ohio Valley go back to around 2,000 BC into the late Archaic (Dragoo 1963; Potter 1970). The people were hunters and incipient horticulturalists who grew squash, gourd, sunflower, and possibly corn, shortly before the birth of Christ. Villages have been difficult to locate on the flood plains where sites can be buried under 1.8 to 2.4 m of sediments (Dragoo 1976: 18). The most striking feature of Adena culture has been its elaborate ceremonialism including the construction of burial mounds and earthworks such as a 405 m long earthwork in the form of an undulating serpent swallowing or holding a great egg. To be able to organize labour and resources to construct such large accretionary structures suggests that the societies in the Ohio Valley may have been organized into chiefdoms where considerable power was vested in an elite element of the society (Trigger 1978: 800). This elaborate ceremonialism was centred in what is now southern Ohio, western West Virginia, Kentucky along the Ohio River, western Pennsylvania, and southeastern Indiana. It was from here that the Adena mortuary complex spread into the Great Lakes region and elsewhere sometime around 600 BC or slightly earlier. Routes of entry would have been up the Ohio River and a tributary, the Allegheny, into the Lower Great Lakes, Lake Champlain, and the Richelieu River to the St.Lawrence River, and from southern Georgian Bay on Lake Huron across to the Ottawa River and, thence, to the St.Lawrence River where the Adena mortuary complex spread as far east as the Gulf of St.Lawrence and the Maritime provinces. The complex was present over a large area of eastern North America until about AD 100 when it either disappeared or was replaced in restricted areas by the related Hopewell mortuary complex. Expansion of the Adena mortuary complex (see Map V) has been attributed to either an actual migration of people from the Ohio Valley (Ritchie and Dragoo 1959; 1960) or to diffusion related to trade (Griffin 1961). Evidence of a migration of people is rejected as habitation sites have never been discovered. On the other hand, the programmatic nature of a number of elements of the burial ritualism suggest that something more than simple diffusion and trade were involved in its spread and maintenance. The only direct evidence of a northern contribution to a trade network involving the Ohio Valley at this time is the presence of native copper from the Lake Superior region and banded slate from Georgian Bay on Lake Huron, the latter used in the manufacture of gorgets (Greenman 1966: 550-551; Helen E. Devereux formerly of Laurentian University: personal communication and examination). Perishables, such as furs, could have been involved in any trade network linking the Ohio Valley with the Lower Great Lakes and Upper St.Lawrence River but it is surprising that exotic northern lithics have not been recognized to the south. Perhaps examination of Adena chipped stone specimens in the Ohio Valley by someone with experience in identifying northern stone types could change the current picture.

Only a few Adena mortuary complex burial mounds have been identified in the Late Great Lakes-St.Lawrence culture area. The See Mound off Gananoque in the upper St.Lawrence River near Kingston, was destroyed in the 19th century (Boyle 1897; Spence 1967). The mound was described as being 12.2 m in diameter and 1.2 to 1.5 m high. Bodies had been placed on the burnt mound floor with some form of stone slab covering. Grave offerings consisted of large mortuary biface knives, notched and unnotched pendants, and pointed whetstones. Such an assemblage appears to represent a blend of Adena and Hopewell mortuary traits. Flint Ridge chert from Ohio has been identified as coming from this mound (Spence 1967). Material from the Pike Farm site on Wolfe Island in the St.Lawrence River, also near Kingston, produced a range of Ohio Valley mortuary biface knives and tubular pipes (Spence 1967) and appears to be older than the See Mound. Further west, the Princess Mound on East Sugar Island in Rice Lake (Boyle 1897; Kenyon 1986) was 11.6 m in diameter and 1.4 m high, almost duplicating the See Mound dimensions. Exclusive of intrusive burials, the mound contained a flexed woman placed centrally on the mound floor. She had an eight string necklace around her neck consisting of three strings of copper beads, three strings of discoidal marine shell beads, and two strings of a small Atlantic coast shell, *Marginella conoidales*, in all totalling more than 1,500 beads. Near the breast was a polished limestone two hole, butterfly-shaped gorget, an Adena mortuary complex diagnostic. There was also a large double bitted copper celt with the burial and a small deposit of red ochre at the base of the head. The Killarney site near Manitoulin Island on Georgian Bay (Greenman 1966) produced an abundance of Adena mortuary complex materials along with a series of radiocarbon dates suggesting that the site was used during the period between 300 BC and AD 1. A substantial amount of organic material, including fabrics and wooden artifacts, were preserved by contact with copper salts from necklaces. Although the burials were stated to have been buried in a constructed mound, personal examination of the site suggests the 'mound' is a natural sand ridge. Habitation debris from the site indicates that a major activity was working the locally abundant banded slate into gorget preforms. An accidentally discovered child burial near Honey Harbour in southern Georgian Bay (J.V. Wright: field work) contained an array of typical Adena mortuary complex traits, including tubular pipes manufactured from Ohio Valley pipe stone. In this instance, the grave was adjacent to a large glacial erratic that overlooked a narrow strait of water. Both of these Georgian Bay sites reflect participation in the Adena mortuary complex by local bands active in the movement of copper, banded slate, and probably other goods from the Upper Great Lakes to the Ohio Valley and elsewhere.

In the Québec City area, an Adena mortuary complex burial was destroyed during road construction (Clermont 1976). The body had been wrapped in a hide robe ornamented with copper beads and was then encased in another hide and subjected to some minor burning. Characteristic large biface knives and points, tubular pipes, twelve necklaces of copper beads, a butterfly shaped polished stone gorget, a large copper ring, an adze, a paintstone of graphite, a naturally occurring soft carbon mineral, an abrader, and a strike-a-light were placed with the 40 year old man along with red ochre. At Mingan, located further east on the northshore of the Gulf of St.Lawrence, the body of a young girl was exposed by erosion. This burial likely relates to Late Eastern Shield culture rather than Late Great Lakes-St.Lawrence culture. The body had been wrapped in bark and had a collar of copper beads. Some shell beads were also present as well as a number of large mortuary biface knives and red ochre (Clermont 1990: 12-14). Subsequent work at the site has disclosed other graves suggestive of a cemetery as well as early Point Peninsula complex pottery. Another Québec site, the Morrison's Island 2 site on the Ottawa River excavated by the late Clyde C. Kennedy, produced a single red ochre burial containing numerous copper beads and a number of large stemmed and ovate mortuary biface blades of styles indicative of a transitional position between the Adena and Hopewell mortuary complexes. The AD 1 date of this burial (Taillon et Barré 1987) is in accord with the Point Peninsula complex occupation of the multi-component site.

A number of Adena mortuary complex sites are known from New York State (Ritchie and Dragoo 1960; Ritchie 1965). At the Long Sault Island site on the St.Lawrence River a 12.2 m diameter and 1.5 m high burial mound was situated on a high bluff overlooking the Long Sault Rapids. It is unlikely to be fortuitous how close the dimensions of the Long Sault Mound match those of the See and Princess mounds. Another mound, stated to be 18.3 m in diameter and 1.5 m high, was said to have once existed on the south side of the same Island in the St.Lawrence River. Both mounds were dug into in the late 19th century but the materials were not kept separate. In flesh burials and cremations appear to have been present. Materials housed in the Museum of the American Indian in New York City, or described at the time of discovery, consisted of the following: blocked-end tubular pipes of Ohio fireclay; stemmed and ovate mortuary biface blades of Ohio Valley cherts and Onondaga chert; a keeled, two hole polished gorget; a graphite paintstone; a fire-making kit; projectile points, some of which closely resemble Point Peninsula point styles, a Point Peninsula pottery vessel whose association with the mound has been questioned; a copper awl, ring and beads; an antler tool; and some preserved fabric. The fabric consisted of plaiting of two-ply skunk hair cordage to produce "...a sash-like product" (Ritchie and Dragoo 1960: 48). Such plaited fabrics are typical of the Ohio Valley although they are generally manufactured from plant fibres.

Two major Adena mortuary complex sites are located near Lake Champlain in northern Vermont adjacent to the Québec border. The Swanton and Boucher sites are situated only 4 km apart on terraces overlooking the Missisquoi River (Haviland and Power 1981: 118; Loring 1985: 105). At the Boucher site, the more than 100 discrete burial pits represented a range of burial practices. Bundle and articulated burials were

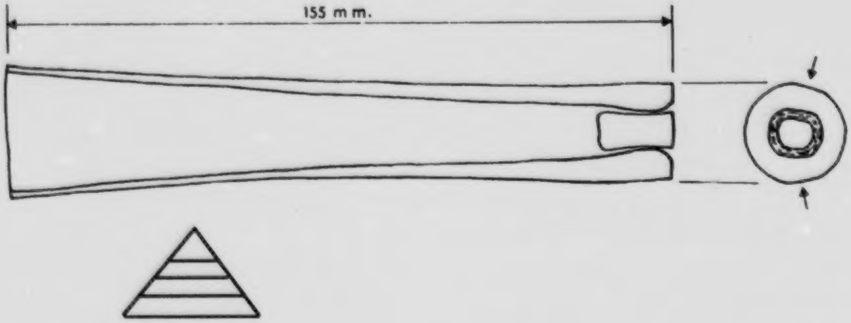


FIGURE 67: CROSS-SECTION OF A BLOCKED-END TUBULAR PIPE AND AN ENIGMATIC MOTIF Usually manufactured from a distinctive variety of limestone from Ohio that hardens upon exposure to the air, such pipes have been found in Adena mortuary complex graves throughout a large area of eastern North America. They represent one of the earliest indications of smoking in the east. It is apparent from the cross-section of this specimen from the CeEt-2 site in Québec City why they have been called 'blocked-end' tubular pipes. A plug, usually of stone, was often inserted into the mouth piece of the pipe. Consistency of form and the distinctive material of manufacture suggest that they were mass produced by a specialist guild in the Ohio Valley for export. (Reproduced from Clermont 1976: Figure 2 with permission. Drawing by L. Goupil). The motif, consisting of a triangle enclosing three horizontal lines, has appeared on the rims of pottery vessels from the McKinley burial site in New Brunswick (Turnbull 1986) and the Boucher site in northwestern Vermont as well as "...etched and line-filled triangles" (Ritchie 1944: 198) on a stone tubular pipe from the Toll Chute cemetery on the Mohawk River in New York. The metaphorical meaning of the motif has been lost in time. (Motif drawing by Dawn M. Wright using Adobe PageMaker.)

more common than cremations with flexed burial being the preferred burial position. No preferences involving sex, age, or orientation were apparent. Red ochre was common and some graves had been capped by ritual hearths. In some respects, the variability in burial practices harkens back to the Glacial Kame and Meadowood mortuary complexes. The absence of superimposed graves in this densely concentrated cemetery indicates that the graves must have once had grave markers (Haviland and Power 1981: 124; Heckenbecker et al. 1990), particularly given that the cemetery had been in use for nearly 1,000 years (Petersen et al. 1989: 131). Blocked-end tubular pipes, axes and adzes, Vinette 1 subconoidal vessels, one with an incised triangular motif filled with horizontal incisions, abundant copper bead necklaces, a modified bear jaw, and numerous other items were placed with the deceased and were sometimes ceremonially 'killed' as, for example, punching a hole in a pottery vessel. Copper salts from the necklaces preserved beechnuts, acorns, textiles, cordage, leather thongs, a copper awl in a wooden handle, and a range of animal remains including mink, deer, fox, beaver, and two snakes placed on the face of one individual. For an exemplary report on the plant cordage and fabrics preserved by contact with the copper necklaces see Heckenberger et al. (1996). Along with locally manufactured stone knives and scrapers were copper from Lake Superior, cherts from Ohio and New York, marine shell beads from the east coast, and fireclay from Ohio. Like the situations with both the blocked-end tube pipes of the Adena mortuary complex and the pan pipes of the Hopewell mortuary complex, the method of copper bead manufacture was so uniform that it suggested production from a single centre of manufacture. In order of frequency, the marine shell ornaments were as follows: common rice olive (*Olivella floralia*); northern quahog (*Mercenaria mercenaria*); knobbed whelk (*Busycon carica*); and common Atlantic marginella (*Marginella apicina*) with both the olivella and marginella beads coming from the southern Atlantic coast of North America. Most of the shell ornaments occurred with women and children, a pattern apparent at the Middle Great Lakes-St.Lawrence culture burial site on Frontenac Island in New York state (Ritchie 1945). It has been speculated that white shell beads in a burial context represented an ideational "...metaphor for light and life, for continuity of life in general; and the social continuity of human life in particular" (Hamell 1989: 205). Such an attribution would explain why white shell beads occur most frequently with women and children in Great Lakes-St.Lawrence culture as well as other cultures. The suggestion of some form of social status based upon the primary graves being more lavishly provided with grave offerings than the cremation burials ignores the possibility that equivalent ceremonial requirements may have been attended to prior to cremation.

The Boucher cemetery, as well as the East Creek and Bennett cemeteries at the southern end of Lake Champlain, retained vestiges of the Meadowood mortuary complex in the form of point preforms, birdstones, fire making kits, and Vinette 1 pottery. A similar mixture of traits appeared at the Palatine Bridge burial site in New York (Ritchie 1944: 193-197). The significance of the 'pairing' of cemeteries in close proximity to one another in both the northern and southern Lake Champlain area and elsewhere will be discussed in the section on **Inferences on society**.

HOPEWELL MORTUARY COMPLEX

All of the burial sites in Southern Ontario formerly attributed to Ohio Hopewell or Hopewellian influences are subsumed under the term 'Hopewell mortuary complex'. The Adena and Hopewell mortuary complexes are early and late expressions of a 1,000 year continuum of mortuary practices that were adopted, to varying degrees, by both the Saugeen and Point Peninsula people. Even in the Ohio Valley the distinction between Adena and Hopewell is vague and frequently based upon the presence of a limited number of diagnostics, such as various gorget and mortuary biface knife forms, blocked-end tube pipes, ear spools, and pan pipes (Struever 1964; 1965). Hopewell, as defined in the Ohio and Illinois valleys, dates between 200 BC and AD 500 (Mason 1981: 238). Around 100 BC burial mounds containing distinctive Hopewell mortuary complex objects appear in the Rice Lake region of southeastern Southern Ontario (Johnston 1968; Spence et al. 1979) continuing a tradition of Ohio Valley influences into the area. A hundred years later, at the Donaldson site in southwestern Southern Ontario, characteristic Hopewell mortuary complex objects such as an ear spool and copper pan pipes were found with burials but earthen mounds were absent (Finlayson 1977). By AD 500, and probably earlier, the last vestiges of the Hopewell mortuary complex disappeared around the beginning of the agricultural revolution. In the Ohio and Illinois valleys this disappearance was once attributed to the impact of a climatic deterioration on the corn crops of Hopewellian peoples (Griffin 1960) but it has since been determined that corn was not a major component of the Hopewell diet (Keegan 1987). Of the estimated 10,000 Hopewell burial mounds that once existed in the Ohio Valley (Kenyon 1986) only a fraction have survived. This unfortunate fact also applies to the mounds in marginal regions like Southern Ontario and western New York.

Just as the late Meadowood and early Point Peninsula complexes had participated in the Adena mortuary complex, so later Point Peninsula and Saugeen people were involved, to varying degrees, in the Hopewell mortuary complex. The Hopewell mortuary complex, however, did not penetrate further north or east than western New York and southeastern Southern Ontario. It has been suggested that this mortuary complex functioned mainly as a device to enhance trade networks (Fitting 1978: 45) but the need for specific Ohio Valley mortuary goods harkens back to an earlier time. And, as earlier, the occurrence of such items appears to have been restricted to burial sites. Imported products from the Ohio Valley consisted of limestone and soapstone platform smoking pipes, copper and silver ear spools, copper and silver pan pipes, flake knives of Flint Ridge chert from Ohio, cut mica sheets, freshwater pearl beads, and a range of large stemmed, notched, and ovate biface mortuary knives (Mason 1981). Whether copper and silver were imported to the Ohio Valley in bulk form for specialized craftsmen to fashion into finished objects or were traded as finished objects from places like Rice Lake is unclear, although there is no direct evidence in the north of either copper or silver manufacturing debris at this time. The Hopewell mortuary complex would have spread from the Ohio Valley up the Allegheny River into western New York and thence to Rice Lake. No mounds are recorded in the intervening territory except for one on the Ontario side of the Niagara River (Boyle 1897; Kenyon 1986). The few burial mounds in the Windsor area represent a minor incursion from Michigan and Ohio (Boyle 1900; Prahl et al. 1976). A reasonable speculation is that the Hopewell mortuary complex in both New York and Southern Ontario was controlled by local shamans who were "...also the same men who guided the economic and religious life of their society, who controlled its wealth, saw to the redistribution of goods, and supervised the funeral sites for their deceased kinsmen" (Ritchie and Funk 1973: 352).

Early evidence of the Hopewell mortuary complex in Southern Ontario is represented at the AD 1 Cemetery 2 of the Saugeen complex Donaldson site (Finlayson 1977). Cemetery 2 consisted of three discrete grave pits. Burial form was quite variable consisting flexed, extended, partially disarticulated and burnt remains, an unusual face-down position, and fully disarticulated bundles. A young adult male who had been dismembered (Figure 68), had his brain removed through a large hole in the back of the skull prior to burial and the jaw rearticulated to the skull. The remains were then placed in a bundle in the grave pit and covered with red ochre. Brain removal is reported from contemporary Ohio Valley mound burials. With reference to the partially cremated individual, the fire may have been set within the body cavity (Finlayson 1977: 499), an attribute noted at the Point Peninsula Le Vesconte Mound on the Trent River to the east (Kenyon 1986). Burials in a grave containing five individuals represented sequential events with some disturbance of earlier graves suggesting an attempt to bury kinsmen together. This would also indicate that the grave location was clearly marked and that the disturbance of earlier burials was not an important consideration. Grave offerings occurred with the adults and included copper pan pipes, a large stone ear spool, a modified wolf and bear maxillae, cut mica sheets, an antler tine hafted beaver incisor knife, an antler 'club spike', bone toggling harpoons, bipointed ground stone problematical objects, and a number of other items including two right femora from the northern flying squirrel (*Glaucomys sabrinus*) which were likely of ritual significance (Finlayson 1977: 469). Cemetery 1 at the Donaldson site was similar to Cemetery 2 in the respect that multiple burials in the same grave were sequential events resulting in disturbance of earlier burials and burial modes included flexed, bundle, and infant burial on the stomach.

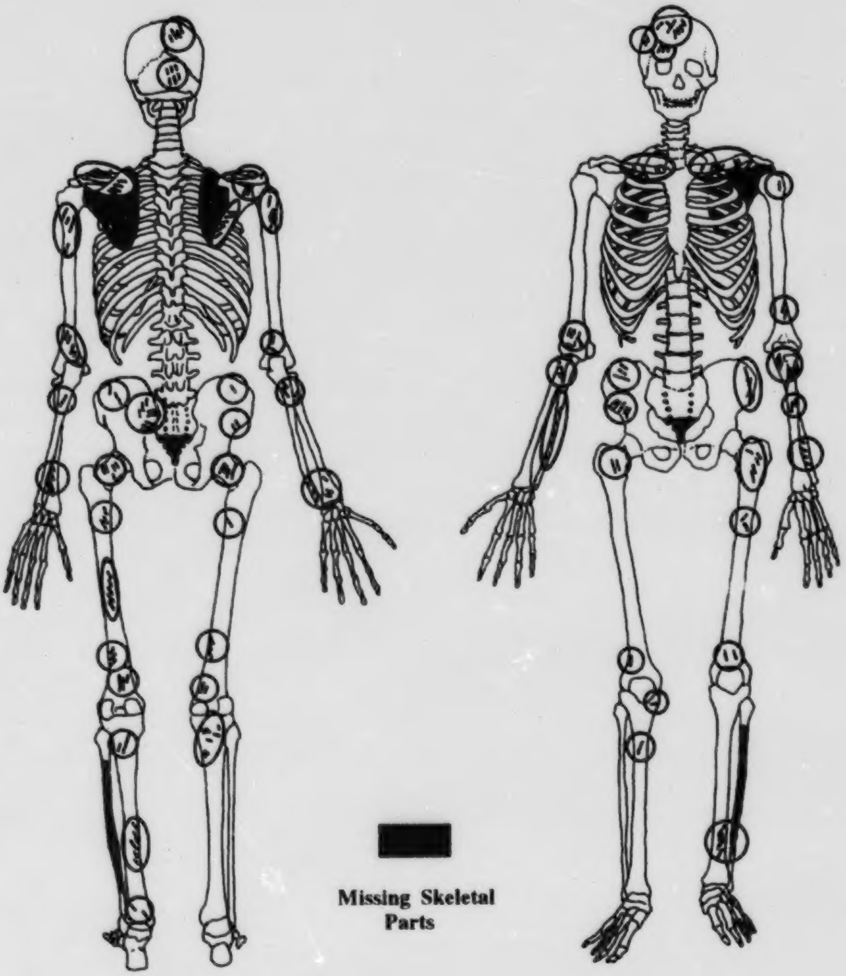


FIGURE 68: LOCATIONS OF CUT MARKS ON BURIAL GF IN CEMETERY 2 OF THE DONALDSON SITE Some might surmise that the body of this young man was in a partially decomposed condition before final burial as portions of the skeleton were missing. The missing portions, however, relate to the shoulder blades, the mid-shaft of a lower limb, and the pelvis, all of which are held in place by strong connective tissue and are not nearly as subject to loss as the bones of the hands and feet which, in this instance, were all intact. It appears that the missing portions had been removed for unknown ritualistic purpose. Defleshing of a fresh or partially decomposed body was a common practice in many areas of North America prior to final burial. (Adapted from Finlayson 1977: Figure 20. Drawing by Mr. David W. Laverie)

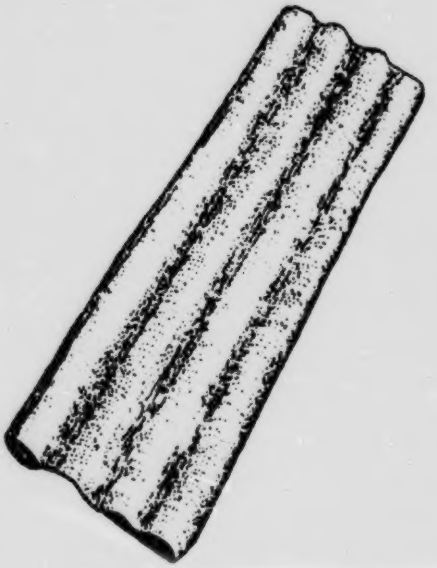


FIGURE 69: HOPEWELL MORTUARY COMPLEX COPPER PAN PIPE Sheets of hammered native copper and, less common, native silver, were shaped to hold wooden reeds together to produce pan pipes, a musical instrument (Young 1976). As pan pipes are only found with the deceased they were presumably objects of particular significance relative to the dead. (Scale approximately one half natural size. Drawing by Mr. David W. Laverie)

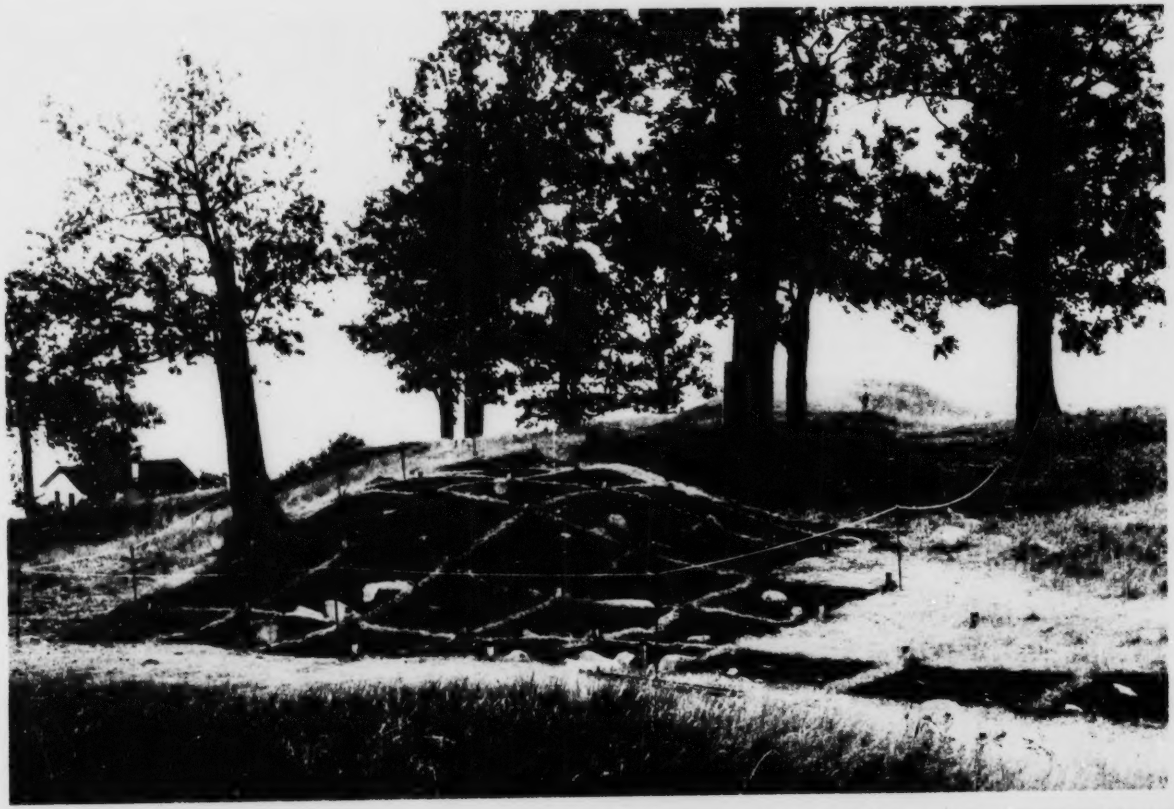
Unlike Cemetery 2, however, all of the grave offerings were with children and infants rather than with adults. This latter trait is more typical of the Adena mortuary complex as is the extensive burning of the floor of the burial area and the laterally ground bear canine pendants from one of the graves. Both of the cemeteries occurred within the habitation area of the site and, despite their differences, appear to have been part of the same mortuary tradition.

Burials discovered at the Williams site near Chatham (Ritchie 1965: 234-235) and Port Maitland (Ritchie 1944: 181) where the Grand River empties into Lake Erie likely pertain to the late Saugeen complex at the end of Period IV. At the former site, an adult and child were covered with red ochre. Grave offerings included unilaterally barbed antler harpoons with single line holes, *Anculosa subglobosa* marine shell bead necklaces, corner-notched projectile points, fire-making kits, a double bitted stone adze, crude chert preforms, a stone platform pipe, and some other items. Only the stone platform pipe can be attributed to influences from the Ohio Valley. The Williams burial site was similar to the Port Maitland site with its separate adult and child flexed burials. Grave offerings with the adult included two ornamented antler hair pieces, conch columella marine shell beads, conical antlers dart or arrowheads and a flaker, some crude chipped stone preforms, a one hole ground slate pendant, a triangular knife or spear, an abrader, a drill, a pottery right angled pipe, and a stone platform pipe. Again, only the platform pipe is particularly indicative of Ohio Valley influences. The head of the child rested on a "pillow" of offerings that included unilaterally barbed harpoons, conical bone arrowheads, matting needles, beaver and porcupine incisor tools, an antler flaker, bone gorges and awls, a deer shoulder blade scraper, an eagle upper arm (humerus), and some unworked antler.

Unquestionably, the most impressive concentration of the Hopewell mortuary complex in Southern Ontario is represented by sites on the Trent River; specifically at its major widening called Rice Lake. Major seasonal base camp sites were also ceremonial centres marked by earthen burial mounds and, in close proximity, an extensive habitation area including large middens of freshwater mussel shells. Most sites contain evidence of earlier Middle Great Lakes-St.Lawrence culture and later Ontario Iroquois occupations of Periods III and V, respectively. The Point Peninsula occupation, however, is the dominant one. Mound construction in the Rice Lake area has been speculated to have been initiated by the death of a community leader (Spence et al. 1990: 164). Later burials were frequently placed in the mounds and, in one instance, early Ontario Iroquois ossuary burial pits were located adjacent to the Point Peninsula burial mounds. Later people obviously regarded the locale of the burial mounds as sacred, reinforcing the archaeological evidence of cultural continuity from Period IV to Period V. The most extensively explored of these sites is the Serpent Mounds site, now incorporated into a provincial park bearing the same name.

The Serpent Mounds site (Boyle 1897; Johnston 1968) consists of nine earth burial mounds (Figure 65), the most striking of which is the so-called Serpent Mound. The Serpent Mound appears to be more of a crooked linear mound than actually being intended to represent the form of a serpent. Approximately 59 m long, 7.6 m wide, and up to 1.8 m in height, the mound represents a series of construction events that took place between AD 200 and 250. Large rocks from the local glacial till make up a considerable portion of the mound fill. Allowing for the destruction of information resulting from random digging by curiosity seekers, 19th century archaeological explorations, and the only partial excavation of the mound, there were 24 burials in pits below the mound floor and 13 burials in the mound fill. Significantly, one half of the burials below the mound floor contained grave offerings while only three of the burials in the mound fill were provided with offerings. Adults and children were both represented in the submound graves and occurred as flexed or bundle burials with some body parts frequently being missing, a circumstance indicative of the temporary placement of the body in a charnel house or on a scaffold where the remains would be eventually retrieved by kinsmen for final burial in a mound. A number of the flexed primary burials were also partially cremated; presumably in place. Other features in the Serpent Mound were a dog burial, a pile of mussel shells, and a large charcoal-rich deposit lacking any evidence of fire. Among the grave offerings were ground wolf and bear jaws, silver and copper beads, animal bones including elements of a loon beak and a mink skull, marine shell disc beads, concretions, fossil horn coral and nautaloids, a stone effigy, an adze, and a perforated plum seed (*Prunus nigra*). Excavations of two of the adjacent ovate mounds revealed that they had been erected over large pits containing both primary and secondary burials but little else. This burial pattern, with its common grave pit and absence of grave offerings, has been interpreted as a late Point Peninsula mortuary practice indicative of the decline of individual status and the need for grave offerings (Spence et al. 1984: 135). It is a pattern which also anticipates the burial practices of subsequent early Ontario Iroquoian peoples during Period V. Even though the burial mound cluster was in close proximity to the habitation area, immediately to the south, camp debris was virtually absent, suggesting that the burial mounds represented a sanctified site area; possibly even that the mound area was surrounded by a fence or some other form of demarcation. It is important to note that burial in artificial mounds must have been for only select members of the local Point Peninsula societies, otherwise far greater numbers of burial mounds would be anticipated.

The Cameron's Point site, a contemporary of the Serpent Mounds site and situated on the same lake, has three linear mounds, ranging from 20.1 to 22.8 m in length and averaging 1.2 m in height (Spence and Harper 1968). All of the mounds are oriented along an east-west axis. A fourth mound, barely evident, was located further back from the shoreline (Michael W. Spence, University of Western Ontario: personal communication). Immediately to the east of the mound cluster is a shell midden. The sequence of events involved in the construction of one of the mounds were as follows: the sod was cleared from the floor of the mound site; burial pits were dug into this surface and bodies placed in them; some fill was added and some surfaces burned; as the mound fill, containing numerous large boulders, was added so were both secondary burials and, in place, partial cremations. Unlike the accretionary Serpent Mound, this mound appears to have been erected as a single event. Like the Serpent Mound, however, the primary burials in the mound floor contained the grave offerings and the secondary burials in the mound fill lacked such additions. Due to previous disturbances it was only possible to estimate that between 35 and 58 burials were interred in this particular mound. As was the case with the Serpent Mound, the grave offerings were quite variable. The most striking objects consisted of silver pan pipes, copper ear spools, and a stone platform pipe. Of the eight burials whose body orientation could be determined, four headed west and four headed east following the orientation of the mound. Habitation refuse in the mound, as well as a probable pottery vessel offering, indicate that the structure was built relatively early in the Point Peninsula complex sequence. It was



BLACK AND WHITE PLATE XXVIII: EXCAVATION OF THE SERPENT MOUND AT THE SERPENT MOUNDS SITE ON RICE LAKE This view of the 1951 excavation of the Serpent Mound under the direction of the late Richard B. Johnston, illustrates a common excavation method of using 5 foot squares with intervening baulks. Such a method allows control over potentially complex stratigraphic events by providing numerous excavation wall profiles which can be studied to accurately reproduce the sequence of mound construction and burial placement. (Photograph courtesy of the Royal Ontario Museum, Toronto)

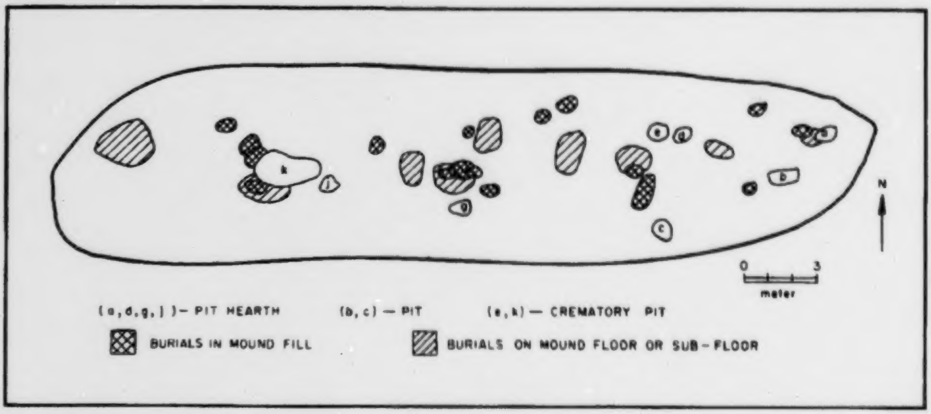


FIGURE 70: FEATURES IN MOUND C OFTHE CAMERON'S POINT SITE Illustrated but not described are the following: 'a' - a pit containing a food offering (bones); 'b' - an empty burial pit?; and 'd' - a possible crematory pit. Intrusive features have been excluded from the floorplan. (Adapted from Spence and Harper 1968: Figs. 8 and 10. Drawing by Mr. David W. Laverie)

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speculated that "Articulation, grave goods, and sub-mound burial were honours reserved for those of high status" (Spence and Harper 1968: 30). In addition to the native silver originating from the Cobalt region of northeastern Northern Ontario and copper from Lake Superior, other objects indicative of participation in a widespread trade network were marine shell pendants from Mound B of *Busycon perversum* and *Strombus gigas* from the southeastern Atlantic coast of the United States and Florida to the West Indies, respectively (Spence and Harper 1968: 41).

The Le Vesconte Mound, situated further down river (Kenyon 1986), can be taken as a final example of the degree of variability in burial ritual at this time. Radiocarbon dates suggest that the mound was contemporary with the Serpent Mounds. The Le Vesconte Mound resembled other mounds in the area in its use of large boulders for fill. Its location on the edge of a high bank of the Trent River resulted in the loss of a portion of the mound to erosion. Unlike the Cameron and Serpent Mounds sites, however, it was a more complex structure with clusters of incomplete bodies and parts of semi-articulated and disarticulated bodies, many charred and scattered throughout the fill. Disturbance has been attributed to the accretionary nature of the mound where bodies were apparently laid upon the mound surface and, in the process of scraping earth over them, earlier burials were disturbed. This mixing of human remains as a result of the disturbance of earlier interments was also noted in the Saugeen complex Donaldson site cemeteries. Le Vesconte Mound features consisted of seven clusters of grave offerings, a crematorium, and an in place cremation in the apparently disembowelled body of one individual. Among the offerings were silver and copper panpipes, cut mica sheets, deer cannon bone daggers, hafted beaver incisor tools, shark teeth, marine shell and copper pendants, dog and fox mandibles, a clam shell filled with erythrite paint (cobalt bloom), an acorn barnacle (*Balanus* sp.), marginella beads from the Atlantic coast, and a *Nerita tessellata* shell from the Bermuda/Florida/Caribbean area. As with other Hopewell mortuary complex sites the grave offerings were dominated by marine shell ornaments and bone tools.

A late glimpse of the Hopewell mortuary complex in Southern Ontario is to be seen in the small mounds located along the Bay of Quinte near the embouchure of the Trent River into Lake Ontario. A circular mound, perhaps 7.6 m in diameter and composed largely of limestone rubble, enclosed a large central slab stone cist containing the remains of three individuals placed in "...a sitting position" (Wallbridge 1860: 416). With one individual was a cluster of grave offerings consisting of an elaborately engraved antler hair piece, a unilaterally barbed harpoon, bone beads and awls, fossils and oddly shaped stones, some clam shells, red ochre nodules, the "...breast bone of an eagle", a bear and a beaver tooth, and what were likely fossil horn corals. Grave contents, including the remains of an eagle, were similar to those from the Williams site near Chatham, Ontario. Two other mounds in the same area contained primary burials but no grave offerings (Ritchie 1969: 9). Refuse incorporated into one of the mounds would assign it to a late Point Peninsula authorship around the end of Period IV and approximately contemporary with the burial mound excavated by Wallbridge in the 19th century.

Along the same 13 km of Bay of Quinte shoreline as the burial mounds are numerous annular mounds composed of fire fractured rock, abundant charcoal, and other evidence of intense fire (Wallbridge 1860). The mounds of fire fractured rock and charcoal, devoid of any other human products, and the burial mounds are likely related (Ritchie 1969a: 9) as they are found together. Both types of mounds are similarly composed of large amounts of fire fractured stone such as "In Mound 2, furthermore, beneath the rock slabs at the center, among which lay the burial, a hearth area was found at depths of 30 to 45 in. below the surface, consisting of burned subsoil and a cluster of some 20 boulders, ranging from 10 to 15 in. in diameter, burned to a crumbly state, the lowermost embedded in charcoal" (Ritchie 1950: 261). Identical annular mounds of burnt rock were recorded at Perch Lake in adjacent New York State and have been dated from 100 BC to after AD 500 (Ritchie 1944; 1969a). The later date range would be more in accord with the recoveries from the burial mound excavated by Wallbridge and the cord-wrapped stick rocker stamped sherds from one of the Ontario mounds excavated by Ritchie. As has been noted (Ritchie 1969a), some of the artifacts from the latter mound possess close parallels with late Point Peninsula materials from the Kipp Island site in central New York.

The burnt stone mounds of the Bay of Quinte region in Ontario and the nearby Perch Lake region in New York have perplexed scholars for more than 100 years. Wallbridge recorded approximately 100 such mounds along the Bay of Quinte coast and on the offshore islands (Wallbridge 1860). The majority of the mounds lacked burials and, unlike the associated burial mounds, possessed a characteristic central depression. Ranging from 9 to 15 m in diameter and under 1.5 m in height with a consistent 2.4 m diameter annular depression in their centres, the features occur in pairs. Paired mounds are always of the same size and situated side by side or up to 30 m apart. Location is quite variable, ranging from hill tops to the Lake margin. In one instance, a pair of mounds had their annular depressions lined with vertical stone slabs (Ibid: 412). Bay of Quinte mounds of burnt gneiss are clearly related to the Perch Lake mounds of northern New York where 200 are originally believed to have been present although no accompanying burial mounds have ever been noted (Ritchie 1969a: 2). The observation made nearly 50 years ago that "...a sweat lodge ritual of purification or healing might relate to a periodic ceremonial observance concentrated in a region in some way invested with a sacred significance" (Ritchie 1944: 316) still would seem to be the most plausible explanation for the existence of these features and their concentrations in specific locales. The acquisition and maintenance of personal spiritual power and health through fasting and the use of the sweat lodge are historically documented to have been widespread in North America. These repetitively used mounds of burnt stone appear to be an archaeological reflection of this practice. While the reasons underlying the sanctity of the specific locales will never be known, it is assumed that they represented areas of supernatural power to which periodic pilgrimages were made.

Burials not associated with mounds have also been reported in the Rice Lake area. In the city of Peterborough, the accidentally discovered Brock Street burial contained a flexed adult male with seven side-notched arrowheads oriented as in a quiver, a number of crudely chipped stone preforms at the shoulder, and the head rested on a 'pillow' of offerings consisting of a beaver incisor knife hafted into an antler scraper or small celt combination tool, two unilaterally barbed harpoons, two unilaterally barbed points, two antler flakers, two human (?) skull discs, two ground slate one hole pendants, a celt, and two beaver incisors (Kenyon and Cameron 1961). Presumably the pairing of objects held ritualistic significance. On the basis of the grave offerings, this burial is probably later than the nearby mound burials on Rice Lake.

Unlike in Ontario, the Hopewell mortuary complex burial mounds in New York State were not associated with habitation sites. Like the Rice Lake situation, however, they are believed to have been constructed by local Point Peninsula people (Ritchie 1965: 215). Overlooking the Niagara Gorge, the Lewiston Mound measured 21 by 18 m and 1.8 m in height and was composed mainly of rocks, some weighing as much as 135 kg. Dated to AD 200 and, thus, contemporary with most of the Rice Lake mounds, the mound contained bundle and cremation burials on both the mound floor and in the mound fill. Evidence of extensive burning in the mound and in place cremation were recorded. The mound fill contained a wide range of items including sheet silver, projectile points, gorgets, copper beads, Ohio Flint Ridge flake blades, and a ground wolf mandible. Also present were numerous pottery sherds of Vinette 1 and Point Peninsula varieties, particularly the latter. At the Squawkie Hill site, three burial mounds exhibited considerable variability in both mound construction and in the use of stone cists to receive some of the deceased. The Geneseo Mound is regarded as the latest of the western New York mounds. This approximately 12.2 m diameter low mound contained a four year old child in its centre with flexed, bundle, and scattered human remains in other parts of the mound. The central location of this child raises considerations of the existence of ascribed status or some very special circumstance surrounding the child's death. Grave offerings found in the Squawkie Hill mounds and the Geneseo Mound included Ohio pipe stone platform pipes and Flint Ridge flake knives, copper ear spools, freshwater pearl beads, marine shell beads, and projectile points. An unusual pendant from the central stone cist burial in one of the Squawkie Hill mounds consisted of a small, square, thin piece of wood wrapped in sheet copper and then sheet silver (Ritchie 1965: 225). Although the variability in mound construction and burial practices in the western New York mounds is similar to that noted on the Trent River, there are only very general similarities between the two mound concentrations. Unlike the preceding Adena mortuary complex, any central control from the Ohio Valley regarding prescribed ceremonial behaviour had apparently broken down by this time.

A site at the eastern end of Lake Ontario in New York, after which the Point Peninsula complex has been named, contained a number of limestone slab covered burials placed in crevices in the limestone bedrock. Flexed burials and a small ossuary of 10 bundle burials were present along with the following offerings: unilateral and bilateral barbed harpoons and projectile points; bone gorges and barbs; an antler handle tool with slots for two beaver incisor chisels at either end; marginella and whelk marine shell beads; antler club spikes (?); antler stone flaking tools; late style side-notched and triangular projectile points; a shark tooth pendant; bone daggers; stone celts; a rectanguloid pendant; and a stone platform pipe (Ritchie 1944: 166-173).

From late Archaic times up to the Adena and Hopewell mortuary complexes, throughout most of eastern North America, there were a number of shared burial practices. These included cremation, the ceremonial use of fire, temporary charnel house or scaffold burial prior to final burial, grave offerings obtained through a widespread exchange system, the use of red ochre, the 'killing' of grave offerings by fire or impact, and a number of other attributes (Ritchie 1965: 198). The practice of 'killing' grave offerings reflects animistic beliefs where the 'soul' of the tool was released in order to accompany the soul of the deceased. Circumstances dictating the implementation of this practice were undoubtedly complex and situationally variable as witnessed by the frequent presence of offerings that were not purposefully broken. In contrast to the local mortuary tradition as represented by the Meadowood mortuary complex, the Adena and Hopewell mortuary complexes represented more than 1,000 years of influences of varying intensity from the Ohio Valley. Adena mortuary complex influences reached as far north as the northshore of the Gulf of St.Lawrence and east to Halifax and appear to have represented an institutionalized religious force centred in the Ohio Valley. What cultural mechanisms assured the maintenance of this influence and its acceptance by a number of different cultures are uncertain. The patterning of the ritual and the consistent supply of specific Ohio Valley objects of presumable cultic significance would appear to have required the participation of indoctrinated priests as opposed to local shamans simply interpreting an Ohio Valley formulae of appropriate ritualistic behaviour. Heeding the advice given over 40 years ago with reference to the Glacial Kame mortuary complex that "They are material remains of a burial complex. Although this complex does contain objects and concepts derived from a larger cultural whole, it would be presumptuous to attempt any definition of the Glacial Kame 'culture' or to assign it to specific classifactory units" (Griffin 1948: 46), the Ohio Valley mortuary complexes in Canada are regarded as manifestations that were not representative of any specific culture. On the other hand, the observation "...that race, language, social organization, and material culture do not vary coterminously today and probably did not do so at any time in the past" (Fitting and Brose 1970: 30) falls into the trap of comparing apples and oranges. The more tightly integrated cultural systems of the pre-European band level societies of eastern North America cannot be equated with either ancient urban societies or with those band societies subjected to the pervasive influences of city states and empires. Band level societies can be identified archaeologically and assumptions of varying conviction can be made regarding human biology, language, social organization, and material culture. But all archaeologically recognizable systems that make up any cultural construct must be viewed as an integrated entity in order to avoid the erroneous impression of cultural homogeneity or relationships created by such cross-cultural horizon phenomenon as the Adena and Hopewell mortuary complexes. In terms of burial mound ceremonialism, such geographically restricted places as Rice Lake and western New York State likely represent key resource and communication locales where enterprising bands could acquire surplus resources, attract followers, and establish some form of social rank in imitation of practices in the Ohio Valley. Given the historic records of individual native travels it would be surprising if a number of northerners had not visited the elaborate ceremonial centres of the Ohio Valley and participated in the sacred rites.

Unrelated to mortuary ceremonialism is a unique site discovered in eastern Southern Ontario by skin-diving Park interpreters followed by SCUBA diver examination (P. Wright 1980; 1982). The Red Horse Portage site is located on the Charleston Lake end of the portage between two lakes situated on the headwaters of the Gananoque River a short distance from its embouchure into the St.Lawrence River. A steep bedrock bank at the end of the portage drops to a depth of 27 m with two ledges at 18 and 9 m below the surface of the water. The aforementioned ledges caught the archaeological objects; predominantly intact or largely intact pottery vessels which, stylistically, spanned 2,000 years of an unbroken pottery tradition from early Point Peninsula to the 16th century St.Lawrence Iroquois. Forty-six pottery vessels, albeit some only consisting of single sherds, were recovered along with some bone and a few chipped stone tools. The probability that such a selective body of data would have come to its final resting place as a result of accident or erosion from an adjacent land site, that overlooks the offshore site, would appear to be slight. Experienced canoeists rarely 'tip-over' and lose their possessions, particularly in the quiet waters of a portage. The high frequency of complete or nearly complete vessels in the underwater site does not suggest discard behaviour from an above water site. Historical documentation of the mythology of the northern Iroquoian peoples records a number of supernatural 'grandfather beings'. One of the most powerful of these was Grandfather Long-Tail, often referred to as a panther- or dragon-being. The Iroquoian belief in this supernatural being parallels that of the neighbouring Algonquian-speaking people. There were a number of Grandfather Long-Tail beings that controlled the waters and could bestow benefits upon deserving humans. They were believed to reside in deep bodies of water in the realm of the Underwater World, particularly at the foot of rock precipices, as protection from their enemies in the Sky World, the Thunderers (Hamell: in press). While it certainly cannot be proven, a possible explanation of the unusual findings recorded at the underwater Red Horse Lake Portage site is that it represented a sacred site visited over a long and continuous period of time by individuals seeking favours from a Grandfather Long-Tail. The pottery vessels would have represented supplicatory offerings. Beyond their possible metaphorical symbolism relating to sustenance, pottery vessels have the practical advantage of being containers that will sink to the underwater abode of the supernatural being whose assistance is being sought. That similar sites have not been located is undoubtedly due to their location well out of range of normal archaeological survey areas. The foregoing is an example of the importance of being aware of historically documented native belief systems when attempting to explain what would otherwise be an incomprehensible archaeological phenomena. As correctly noted, however, (Phillip Wright, Mount McGovern Co. Ltd., Oxford Mills, Ontario: personal communication) other underwater sites in the same general area could pertain to other activities. At one of the South Lake sites (BcGb-6), for example, three discrete deposits of animal bone and 28 pottery vessels, representative of a continuum from Point Peninsula to late Iroquoian times, were recorded offshore from a small island campsite. The faunal remains from both the land and the underwater sites at South Lake were predominantly deer with the deer remains being most prevalent in the underwater site. Cut marks, spiral fractures, and carnivore gnawing were evident on the bones. While the land based sites appear to be mainly deer hunting and processing sites, the adjacent underwater sites may constitute evidence of discard behaviour related to taboos involving the treatment of the remains of deer captured in deer pounds. Samuel de Champlain, when he participated in one of these communal hunts with the Huron, recorded a taboo against roasting or letting fat or bones of deer fall into the fire (Biggar 1929: 91-92). Such treatment of the bones of deer captured in a pound (large numbers trapped) was similar to the ritualistic treatment the Huron accorded fish captured in nets (large numbers trapped) (Wrong 1939: 188), suggesting that it was the method of entrapment that required ritualistic treatment in order not to offend the spirits of the animals being trapped rather than anything relating to the animal species per se. Other isolated Point Peninsula vessels have been found in underwater locations in the region but the purpose of their deposition is not known. It is apparent from the foregoing that underwater archaeology has an important contribution to make to the understanding of the pre-European history of Canada.

External relationships:

Late Great Lakes-St.Lawrence culture bands had relationships, of varying intensity, with cultures to the south, to the north in the Canadian Shield of Northern Ontario and Québec, and east to the Atlantic seaboard. The interconnected waterways of the Great Lakes and their tributaries and eventual drainage into the Atlantic via the St.Lawrence River provided ready travel routes across much of the continent. This network of water travel was further enhanced by its proximity to the drainages of the Mississippi River and those leading into Hudson Bay. Relationships involving the Saugeen and Point Peninsula complexes are reflected in the trade in western Onondaga chert that continued after Meadowood disappeared as an archaeological entity. Pennsylvania jasper, common on Ontario and Québec Point Peninsula sites, would have been traded through intermediary Point Peninsula bands of New York and Vermont. In general, however, the archaeological evidence does not suggest that a great deal of interaction took place between the various bands that made up the Saugeen and Point Peninsula complexes.

"A"

"B"

BLACK AND WHITE PLATE XXIX: AN UNDERWATER SACRED SITE? 'A' is an underwater view of the Red Horse Portage site showing a SCUBA diver measuring the location of a pottery vessel. 'B' shows a range of pottery vessels recovered from this site. Point Peninsula vessels are shown at the bottom and along the left-hand side of the picture while later Iroquoian vessels are situated to the right. (Photographs courtesy of Phill Wright, Mount McGovern Co. Ltd., Oxford Mills, Ontario. Mr. Wright also provided important unpublished information on the underwater sites of the Gananoque area)

Cherts from the Saugeen Donaldson site, for example, were predominantly from southwestern Southern Ontario or adjacent Michigan sources (Finlayson 1977: Tables 32 and 89). Some of this apparent parochialism may simply reflect the fact that both of these groups shared related pottery styles and, as such, recognizing specific occurrences of Point Peninsula or Saugeen sherds in each others territory is not a simple task. As an example, a single Saugeen complex pottery sherd was identified at the Point Peninsula Cameron's Point site (Spence and Harper 1968: 48). Of course, if the hypothesis that dentate stamped pottery styles originated somewhere in Southern Ontario is correct then its spread throughout much of eastern North America represented a significant stylistic contribution to many different cultures. Another problem in assessing the extent of Late Great Lakes-St.Lawrence culture relationships with neighbouring cultures is undoubtedly the relative recency of attempts to finger-print various exotic archaeological materials to their geological, biological, and cultural sources. Thus the following consideration of contacts with cultures to the south, the Canadian Shield, and theAtlantic region portrays a very incomplete picture that will undoubtedly be greatly expanded upon.

A wide range of objects of Ohio Valley manufacture and material penetrated the Lower Great Lakes and upper St.Lawrence Valley in association with the Adena and Hopewell mortuary complexes. Most common were tubular pipes of Ohio fire clay and large mortuary biface knives of Ohio Valley cherts. Much of the Lake Superior copper which found its way into the Ohio Valley and beyond was likely transported through Late Great Lakes-St.Lawrence culture intermediaries. Similarly, the native silver from Cobalt in northeastern Northern Ontario was traded to the south. The transformation of these metals into pan pipes and ear spools, however, may have been done by either Rice Lake or Ohio Valley artisans. An absence or scarcity of workshop evidence relating to the actual manufacture of copper and silver objects in Late Great Lakes-St.Lawrence culture suggests that these metals were probably transported south in nugget or sheet form to be manufactured into finished products and then exported back north. There is currently no evidence of northern exotic stone items appearing in the Ohio Valley but this could simply be due to the fact that no one familiar with the northern chert and quartzite varieties has yet scrutinized the Ohio Valley collections. Most goods exchanged would not have survived in the archaeological record. It is a reasonable assumption, for example, that high quality northern furs would have been in demand to the south while such items as elaborate twined plant fibre cloaks and bags were traded north. At this point in time, relationships between the Ohio Valley and the Lower Great Lakes and the upper St.Lawrence Valley appear to have been largely restricted to ceremonial objects intended for placement with the dead. This conclusion is supported by the absence or scarcity of Ohio Valley objects in habitation sites, suggesting that the movement of goods was not secular but religious and that the trade network existed to provide the necessary paraphernalia for the Adena and Hopewell mortuary complexes. An impression of a north-south trade based upon religious as opposed to secular considerations is reinforced by the archaeological evidence. At the Saugeen Donaldson site, for example, a single zoned dentate stamped sherd, two vessels with applique lugs, and two probable Ohio Valley flake knives (Wright and Anderson 1963) were the only southern traits identified among the mass of cultural debris. In Cemetery 2 of the same site, however, abundant evidence of Ohio Valley contacts in the form of a stone ear spool, bipointed ground stone objects, cut sheet mica, ground wolf and bear skull parts, and copper pan pipes was apparent (Finlayson 1977). The contrast in the quantities and varieties of exotics recovered from a burial context versus a habitation context at this site is striking. Caches of typical Hopewell mortuary complex bifaces, as well as occasional prismatic blades, have been reported from other Southern Ontario sites (Spence et al. 1990: 145). Both the Early Woodland and Middle Woodland occupations of the Schultz site in Saginaw Bay on the Michigan side of Lake Huron (Fitting 1972b) exhibited little evidence of contacts with contemporary Saugeen sites on the other side of the Lake. With reference to the 500 to 100 BC Leimbach phase of northern Ohio, with its ditched and palisaded villages surrounding 7.3 to 12.2 m diameter houses and containing a technology very similar to that of the Schultz site, it is observed that the culture was largely "...uninfluenced by cultural developments in the upper Great Lakes region..." (Prufer and Shane 1976: 293). Relationships were to the south, not to the north or west, and the same pattern of relationships maintained itself throughout the following Middle Woodland occupations of Michigan and Ohio. More southerly Saugeen complex sites like the Wyoming Rapids, Simons and Boresma sites, however, did contain evidence of contacts in the form of a distinctive cord impressed pottery style that occurs in the still poorly known Early Western Basin or Couture culture of extreme southwestern Southern Ontario and adjacent Michigan and Ohio (Spence et al. 1990: 144). An abundance of broad corner-notched points from western Southern Ontario, manufactured from Ohio Flint Ridge chert, has been interpreted as evidence of a significant movement of Early Western Basin people into the area between AD 1 and 200 (Ibid: 145). On the other hand, these points could simply reflect seasonal excursions from Ohio and Michigan or as yet unrecognized relationships with the local Saugeen complex bands. Undoubtedly when research is carried out with the specific goal of demonstrating contacts between neighbouring cultures the present very incomplete picture will be substantially altered.

It was originally intended to include a brief chapter on an Early Western Basin culture (Couture culture) situated in extreme southwestern Southern Ontario. The limited evidence and the absence of undisturbed archaeological contexts makes discussion of such a culture premature even at a very tentative level. It is probable that such a culture existed in the area and would eventually give rise to the much better known Late Western Basin culture of Period V. There is even some evidence of interaction between the

Saugeen complex and the hypothesized Early Western Basin culture. At this point in time, however, it is more prudent to simply note the probability of the existence of such a culture in the Lake St.Clair region (Spence et al. 1990: 144-148) and its close relationship to developments in adjacent Ohio and Michigan (Stothers and Abel 1993).

The nature of the evidence suggesting relationships between Late Great Lakes-St.Lawrence culture and the contemporary Late Western Shield culture (Laurel) in the Canadian Shield is quite different from that noted with the more southerly groups. At the Donaldson site, Late Western Shield culture pottery was found in association with the Saugeen cultural debris (Finlayson 1977; Wright and Anderson 1963) and at the Late Western Shield culture Heron Bay site on the northshore of Lake Superior (Wright 1967) both typical Saugeen pottery and a single Vinette 1 sherd were found. As pottery is believed to be a product of female manufacture, this association of the distinctive pottery of the Saugeen complex and Late Western Shield culture suggests intermarriages involving the movement of women to the residences of their husbands. One could argue that such evidence simply indicates a trade in pottery vessels. While such a trade would be understandable on the part of Saugeen people, it is difficult to conceive of a Late Western Shield culture woman wanting a place in her household for a crude Saugeen vessel alongside her superior fired, modelled, and decorated local vessels. There is no equivalent evidence that the equally distinctive stone tool assemblages of these two cultures occurred on either of the aforementioned sites. The evidence suggests an intimate relationship between certain of the Late Great Lakes-St.Lawrence and Late Western Shield culture bands, perhaps required by trading partners involved in the movement of native copper and perishable goods from Lake Superior to the Lower Great Lakes. There is also evidence of relationships between Late Western Shield culture and the Point Peninsula complex bands of the Ottawa Valley (Mitchell et al. 1970) as well as Lake Nipissing (Ridley 1954). Similar associations likely occurred in northwestern Québec (Burger 1953). Given that the Cobalt silver was in Late Western Shield culture territory, it can be anticipated that a relationship existed with the Point Peninsula bands of the Trent River system.

Marine shell beads from Meadowood, Saugeen, and Point Peninsula burial sites indicate a major trade link with the central and southern Atlantic coast of North America. Far less common are northern coastal specimens like the Turban barnacle (*Belanus hameri Ascan*) from the Batiscan site near Trois-Rivières (Levesque et al. 1964). Of interest is the fact that this particular barnacle is found in deep water at the mouths of "...cold estuaries along the outer coast" (Bousfield 1960: 40). Marine shell from the Gulf of Mexico could have moved up the Mississippi River into the midwest and thence to the Lower Great Lakes. The great white shark (*Carcharodon carcharias*) tooth from the Le Vesconte site (Kenyon 1986: 38) could have come from the Gulf of St.Lawrence, Chesapeake Bay, or the Gulf of Mexico. The limited number of Point Peninsula vessels in the Gulf of St.Lawrence and Labrador/Newfoundland may reflect intermarriages between the Point Peninsula bands of the upper St.Lawrence River with people along the lower St.Lawrence River and beyond. It is speculated that the earliest pottery of the Maritime provinces, which is indistinguishable from upper St.Lawrence River early Point Peninsula styles, is a reflection of a very broad social network based upon interband marriages involving females moving from their places of birth to reside with their husbands. Since Late Maritime culture did not possess a recognized local pottery tradition at this time, there is no way of assessing the possibility of the two-way nature of a broad social network held together by marriages. Certainly the vast majority of the marine shells found in the interior come from the central and southern coasts rather than from the northern coast. There is no reason why the female mobility suggested by the distribution of different pottery varieties in the Canadian Shield (Wright 1981) could not have also existed along the water routes connecting the interior of North America to the Atlantic Ocean. These distributions also raise thoughts regarding the extent of bilingual or multilingual individuals within the societies in question.

Human biology:

Human biology is not a clinical cul-de-sac but reflects many aspects of human behaviour, "The patterns of diseases and injury that affect any group of people is never a matter of chance. It is invariably the expression of the stresses and strains to which they were exposed, a response to everything in their environment and behaviour. It reflects their genetic inheritance (which is their internal environment), the climate in which they lived, the soil that gave them sustenance, and the animals or plants that shared their homelands. It is influenced by their daily occupations, their habits of diet, the choice of dwelling and clothes, their social structures, even their folklore and mythology" (Wells 1964: 17). Information on the human biology of Late Great Lakes-St.Lawrence culture is uneven. Variable preservation of skeletal remains and advances in methods of analyses in physical anthropology account for most of the uneveness. The change from mainly metrical studies of skeletal remains to attempts to reconstruct the genetic patterning of ancient populations based upon discrete skeletal form attributes is providing new insights. These new methods of analysis, in combination with the archaeological evidence, place certain inferences, such as the degree of biological distance between populations, on a much firmer footing.

The Terminal Archaic Glacial Kame mortuary complex Hind burial site was considered in the chapter on Middle Great Lakes-St.Lawrence culture in Volume I (Wright 1995). Since that publication, a detailed description of the Hind site and other

Glacial Kame mortuary complex sites in Ontario has appeared (Donaldson and Wortner 1995). Included in the latter publication is a section on the human biology of the Hind site population (Varney and Pfeiffer 1995). As the Glacial Kame mortuary complex stands at the transition from Period III to Period IV these new data may be appropriately considered here. The enlarged skeletal sample, exclusive of cremations, includes 16 adults and 6 subadults with an age range of 3 months to 50+ years. Average age for adult males was 39 years and 32 years for adult females. If the skeletal sample from the Hind site is representative of the once extant population, then approximately one-third of children did not survive to adulthood. Some of the subadults had Harris lines on tibiae and radii, two of the bones of the lower limb and lower arm, respectively, which are indicative of chronic nutritional stress. Harris lines are thought to be produced by periods of bone growth arrest with subsequent renewed bone growth. While activity-induced osteoarthritis and "poor dental health" characterized the population, there was little evidence of adult nutritional deficiency or infectious disease. Tooth wear associated with the consumption of coarse foods can "...compromise general health through poor nutrition due to loss of appetite, reduction of masticatory efficiency and the spread of infection" (Varney and Pfeiffer 1995: 106). Two exceptional pathologies recorded were a middle aged woman with a tumour-like lesion and a young adolescent with a chronic metabolic disorder (Ibid: 96).

As a result of both the high incidence of cremation and burial in acid soils there is little physical anthropological information regarding Meadowood populations. With reference to some adult skulls from the Wray site in New York it was noted that "...the head form was long or moderately long and narrow, and of medium height; with face of medium breadth (in one case relatively narrow), orbits of medium height, and a narrow nose" (Ritchie 1965: 182). The metrical and discrete trait variability of the two measurable adult males from the Bruce Boyd cemetery on the northshore of Lake Erie suggested that "...there was no prevailing postmarital residence pattern" indicating "...a relatively open and flexible society" (Spence and Fox 1986: 24). Such generalizations cannot be given too much weight based as they are on a sample of two, but it can be anticipated that the small, exogamous bands of Late Great Lakes-St.Lawrence culture would have been characterized by considerable gene flow and local genetic variability. Of the 20 individuals identified at the Bruce Boyd site 75% were adults, 15% subadults, and 10% indeterminate (Spence et al. 1990: 133). One individual was immobilized by a 'severe hip infection' (Spence 1986) providing evidence that the economic base of the society permitted extended care giving and the survival of invalids.

Physical anthropological information obtained from Adena mortuary complex cemeteries, which would mainly relate to the Point Peninsula complex, is also of uneven quality. Only limited information could be extracted from the frontal skull portion of a forty year old man preserved by contact with copper salts at the Boulevard Champlain site in Québec City (Clermont 1976: 41-42). Tooth wear and post-mortem tooth loss typical of most hunters and gatherers was noted. At Mingan, on the northshore of the Gulf of St.Lawrence, the remains of a young girl revealed possible evidence of osteomylitus (Clermont 1990: 13). More information is available from the Boucher cemetery in northern Vermont where, like the Boulevard Champlain site, uncremated remains were only preserved by copper salts from necklaces (Haviland and Power 1981: 123). Allowing for the limited nature of the evidence, the people have been described as being of moderate stature, round headed with high foreheads, and possessing wide faces and noses with some tendency to prognathism. The age of death at the Boucher site was as follows: less than 2 years (15%); less than 6 years (10%); less than 11 years (15%); 11 to 21 years (5%); 21 to 31 (10%); 35 to 55 (30%); and 55 more than years (15%). A high death rate of children under 11 years of age is not uncommon among hunters and gatherers. Teeth were heavily worn among the 35 to 55 age group and extremely worn in those individuals over 55 years of age, another trait typical of hunters and gatherers and indicative of their coarse diet. Arthritis, traumatic bone breaks, and possible Vitamin C deficiency, were also noted. Stable carbon and nitrogen isotope ratios of the 45 individuals from this cemetery that could be tested confirmed the dental evidence that the people participated in "...a broad spectrum hunting, gathering and fishing economy" (Krigbaum 1989: 108).

In contrast to the preceding, there is considerable physical anthropological information pertinent to both the Saugeen and Point Peninsula people and, in particular, for the latter. An important conclusion resulting from the comparison of the people of these two complexes of Late Great Lakes-St.Lawrence culture is that they were morphogenetically divergent from one another (Molto 1983: 235). The biological comparison of the Point Peninsula populations from the Serpent Mounds site and the Le Vesconte site with the early Iroquoian ossuaries of the Serpent Mounds site not only "...suggest that locality and biological distance bear some meaningful correlation" and that "...the term 'Ontario Iroquois' can be legitimately used to refer to the Middle, as well as the Late Woodland peoples of this region" (Molto 1983: 256). The suggestion that the early Ontario Iroquois people in the Rice Lake region were genetically related to the earlier Point Peninsula people is also supported by cultural practices, such as the former burying their dead in the same burial grounds as their immediate predecessors. With reference to the Saugeen people and their descendants, the close biological relationship between the Donaldson site population and the early Period V Surma site population in Fort Erie, Ontario (Emerson and Noble 1966), adds some support to Finlayson's proposal (1977) of an in place development of the Princess Point complex of Period V out of Saugeen (Molto 1979). Biological distinctions between the Saugeen and Point Peninsula people of Southern Ontario reinforce the archaeological evidence that they were distinct but contemporary regional complexes. The morphogenetic evidence (skeletal form attributes determined by genetic inheritance) also suggests "...that the Late Woodland Iroquois were a product of biological admixture between the ancestors of distinct indigenous Middle Woodland populations representing Saugeen and Point Peninsula cultures..." (Molto 1983: vii).

Based on the individuals in Cemetery 1, the Saugeen people were a "...tall, robust people..." (Wright and Anderson 1963: 99) with average heights of 180 cm for males and 175 cm for females. Tooth wear was marked and there was light to severe periodontal disease. Some slight evidence of vertebral arthritis was also present. A comparison of the teeth of individuals from cemeteries 1 and 2 of the Donaldson site revealed that enamel hypoplasia had an occurrence of 20.3 % in Cemetery 1 and 63.0 % in Cemetery 2 (Molto 1979). This condition indicates nutritional deficiencies during childhood. It was also speculated that the increased incidence of dental cavities in the later Cemetery 2 was likely due to an increased intake of wild plant carbohydrates rather than being evidence of incipient horticulture.

Information on the Point Peninsula people comes mainly from the Rice Lake region. The age of death and sex frequencies of individuals from three of the burial mounds of the Serpent Mounds site, given in Table 11, is informative regarding both human biology and cultural practices. The most striking features of the Table are the absence of newborns, the dominance of adults over children, and the disproportionate number of adult males to adult females. While there appears to be high adolescent mortality, the nature of the sample has been so heavily biased by cultural practices that little weight can be attached to the observation. Cultural factors, for example, determined that certain age and sex categories of people were more apt to be buried in the burial mounds than others. There appears to have been a definite gender status applied to the uncremated remains with the ratios from the three mounds ranging from over 2:1 to nearly 5:1 in favour of adult males over adult females.

Severe dental wear, including fracturing of molar cusps, and a low incidence of cavities due to heavy attrition and low carbohydrate consumption of people at the Serpent Mounds site are all characteristics that the Point Peninsula people shared with the Saugeen people and other hunters and gatherers. Regarding pathology, there was a high incidence of traumatic skull and limb lesions, one possible case of vertebral tuberculosis (Pott's disease), ulcerous lesions of the humeri, rare instances of bone tumours, congenital abnormalities, spondylolysis, and scaphocephaly. There were only three instances of cribra orbitalia, an indicator of severe enemia, which all occurred in young people. Arthritic change was common with 75 % of the adults being affected. The afflicted areas usually involved the elbow in contrast to the hip area characteristic of later Iroquoian

Category	Serpent Md.		G Md.		I Md.	
	f	%	f	%	f	%
New born	-	-	-	-	-	-
Juvenile	11	22.9	3	13.1	11	31.4
Adolescent	3	6.3	3	13.1	2	5.7
Adult	24	50.0	6	26.1	16	45.7
Mid-adult	7	14.6	1	4.4	-	-
old adult	3	6.3	10	43.5	6	17.2
Total	**48**	**100.1**	**23**	**100.2**	**35**	**100.0**
Males	20	58.8	14	82.4	15	68.2
Females	8	23.5	3	17.7	5	22.5
?	6	17.7	-	-	2	9.1
Total	**34**	**100.0**	**17**	**100.1**	**22**	**99.8**

TABLE 11: AGE OF DEATH AND SEX OF INDIVIDUALS BURIED AT THE SERPENT MOUNDS SITE Comparative units are drawn from the Serpent Mound, Mound G, and Mound I of the Serpent Mounds site. With reference to the gender portion of the Table, the juveniles and adolescents have been excluded thereby accounting for the different age/gender totals (Adapted from Anderson 1968).

populations (Anderson 1968). At the nearby, but slightly earlier Cameron's Point site, the two most common ailments were peridontal disease, a result of excessive tooth wear, and arthritis. There were single instances of severe osteomyelitis, periostal hematoma, and fused thoracic vertebrae. Male and female average heights are recorded as being 170 cm and 160 cm, respectively (Spence and Harper 1968), and are considerably shorter than the averages of the Saugeen people from the Donaldson site. With reference to the dental health of individuals from the Le Vesconte Mound, it was noted that they were "...characterized by a low antemortem tooth loss, moderate to severe occlusal attrition, low levels of caries, and substantial tooth trauma..." (Patterson 1984: ix). A high incidence of enamel hypoplasia appearing at 3 years of age would suggest post-weaning metabolic stress (Ibid: 176 and 326-327). While dental problems are typical of hunting and gathering people, the moderate presence of caries in this population raises the possibility of some incipient horticulture or, at the least, an increasing reliance upon plant foods such as wild rice.

Findings from the Schultz site on the Lake Huron coast of Michigan are likely pertinent to the biology of Late Great Lakes-St.Lawrence culture peoples. Dog dung from the late Middle Woodland occupation of the site, dating between AD 350 and 500, contained tape worm eggs (McClary 1972). Of all the species of tape worm, *Echinococcus granulosus* can be particularly dangerous to humans. Its cycle involves wolves and dogs as definitive hosts, ungulates as intermediate hosts, and, thus, the transmission of the parasite from dogs to people is possible, particularly if the dogs were eating ungulate droppings. Another tape worm, (*Diphyllobothrium latum*), was also identified but, as all of the specimens examined were eggs, the identifications are tentative. It would appear that the parasites did not constitute a serious health problem despite their likely transmission to humans by either dogs or undercooked fish or both. Dog coprolites from the late Middle Great Lakes-St.Lawrence culture Knechtel I site failed to produce any evidence of the parasites (Patrick D. Horne, University of Toronto: personal communication).

Inferences on society:

The social structure of Late Great Lakes-St.Lawrence societies appears to have been for the most part the same as that of their Middle Great Lakes-St.Lawrence culture ancestors; namely, local exogamous bands of variable size, likely patrilineal with a patrilocal residence pattern, that interacted with other neighbouring bands to form regional bands or a connubium. A number of bands linked together by blood through wives moving to their husband's band would have provided an extended safety net with reference to mutual support and also a kinship matrix that would allow for considerable flexibility in travel and choice of residence. To judge from the distribution of exotic goods and different pottery styles, the regional bands not only interacted with one another but with neighbouring cultures as well. The Saugeen and Point Peninsula complexes, separated by the Niagara Escarpment, appear to represent two discrete groupings of interbreeding band clusters. Saugeen communities intermarried with Late Western Shield culture bands to the northwest (Laurel) and Point Peninsula bands appear to have had a similar relationship with people to the north as well as eastward down the St.Lawrence River and possibly along the Saint John River. As the inference of cross cultural intermarriages is based upon the distributions of culturally distinctive styles of pottery vessels, a female product of manufacture, it would appear that the relationship was based upon women leaving their place of birth to reside with their husbands. Resulting blood ties would certainly have favoured trading agreements involving individuals such as trading partners. The preceding speculations are made with the caveat that "Defining cultural and sociological entities on archaeological evidence are two different and separate problems, and the latter is intrinsically more difficult than the former" (Mason 1981: 260).

A unique social force was represented by the spread of the Adena mortuary complex into Late Great Lakes-St.Lawrence culture territory. The uniformity and consistency of a number of the mortuary practices has led to the speculation that burial ceremonies may have been administered by priests coming from, or trained, in the Ohio Valley. Even at its height, however, the Adena mortuary complex does not appear to have had a significant impact upon the everyday life of the people who participated in it. Indeed, only a very small percentage of Late Great Lakes-St.Lawrence culture people appear to have been directly involved in the cult.

A probable reflection of an aspect of social structure are the paired Adena mortuary complex cemeteries of Bennett and East Creek and Swanton and Boucher on the southern and the northern ends of Lake Champlain, respectively. In both instances the paired cemeteries are within 4 km of each other. This pattern is similar to the earlier Meadowood cemeteries at Muskalonge and Red lakes in northern New York where the two cemeteries were separated by less than 5 km (Ritchie 1955: Figure 1). If the Vermont paired cemeteries were contemporary, as would appear to be the case, then their proximity to one another may suggest "...the existence of a well developed lineage or clan system, each with an exclusive ceremonial precinct" (Loring 1985: 105). The paired cemeteries could also indicate the existence of a moiety that required one group of clans to bury the deceased of another group of clans who reciprocated in kind. A somewhat similar situation was discovered at the Ault Park site on the St.Lawrence River near Cornwall, Ontario (Wright n.d.(b)). Here two early Point Peninsula complex cemeteries, situated approximately 100 m apart, shared a number of quite specific traits, as indicated in Table 12, and were likely contemporaneous. The presence of the distinctive ceremonial hearths in both cemeteries is particularly noteworthy.

It has been speculated that an increasing reliance upon plant foods and the development of incipient horticulture from late Archaic times on led to greater residential stability and an increase in the band leader(s) authority at the expense of individual autonomy. Differences in individual burial traits are interpreted as evidence of this status change in a previously egalitarian society (Spence et al. 1978: 44) and was most apparent in the Rice Lake area (Spence 1986: 92). Evidence of significant status differentiation within society at this time, however, is not fully convincing. It is apparent that at a particular location like Rice Lake there were aggregations of larger and more sedentary bands but, given the exceptionally favourable subsistence and water transport network, the evidence does not in itself denote a major shift away from the traditional nuclear family, local band, and regional band based social relationships. The nature of

Trait	Cemetery I		Cemetery II	
	f	%	f	%
Cremation	12	16.2	31	32.3
Uncremated	18	24.3	13	13.5
Ochre pellets	4	5.4	6	6.3
Painted cremated bone	2	2.7	7	7.3
Red ochre paint	14	18.9	16	16.7
Grave Offerings	17	23.0	8	8.3
Pebbles	2	2.7	9	9.4
Cermonial hearths	5	6.8	6	6.3
Totals	**74**	**100.0**	**96**	**100.1**

TABLE 12: COMPARISON OF THE EARLY POINT PENINSULA CEMETERIES I AND II AT THE AULT PARK SITE There were 29 recognized graves identified in Cemetery I and 49 in Cemetery II. The qualifier 'recognized' is necessary as the acid soil at the site dissolved all bone except occasional teeth caps, carbonized bone, and, in one instance, there was partial bone preservation due to the acid neutralizing effect of the ash from a large associated hearth of fire fractured rock that capped the grave. If a grave lacked nonperishable offerings, red ochre, or carbonized bone, it would not likely have been recognized as a feature. Given the general nature of the burial traits and the less than ideal circumstances surrounding the salvage excavation of the site, the two cemeteries have a relatively high coefficient of similarity of 143.8 where 200.0 indicates identical comparative units and 0.0 totally different comparative units. Note: 'Painted cremated bone' refers to the painting of the cremated remains with a red ochre paint prior to final burial with no free ochre occurring in the grave other than that adhering to the bone; 'Pebbles' refer to probable accidental additions to the grave that had been scooped-up with the cremated remains from crematories situated somewhere outside of the habitation area on glacial till where such pebbles are common to the natural matrix; and the presence of two possible dog burials from one of the graves with multiple burials in Cemetery I is not listed in the Table.

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grave offerings or their absence and burial treatment relative to age and gender cannot be directly equated with a developing system of social rank within the society. There are simply too many possible cultural and situational variables to be considered. The different burial treatment provided individuals on a mound floor as opposed to those incorporated in the mound fill need not have anything to do with status but could be the product of other factors such as a winter death when cremation would have been a practical way to package the body for eventual burial in a mound, nature of the death (e.g. violent, drowning, etc.), and other totally unknown and unknowable factors. The concentration of cremations and bundle burials in mound fill with few if any grave offerings could simply reflect the treatment of deceased members of the band whose ceremonial needs had been attended to earlier at their former temporary burial locales. There is no question that adult men were often given preferential treatment over women and children in terms of subfloor placement within burial mounds. A more frequent occurrence and variety of grave offerings with men, however, is not unusual for hunting and gathering societies. One must be ever cognizant of the fact that the only grave offerings the archaeologist sees are the imperishable objects. A female grave, lacking archaeologically visible offerings, could once have been richly endowed with fabrics, wooden bowls, etc.. The fact that there are invariably exceptions to any generalization regarding burial practices suggests the existence of many complicating variables. For example, was the dismembered young male in Cemetery 2 of the Donaldson site, who had his brain removed and was richly provided with ritualistic, status objects such as copper pan pipes, a wolf maxillae mask element, a stone ear spool and cut mica sheets, an important shaman or band leader? His youth, estimated to be between 15 and 18 years of age (Finlayson 1977: 268), would suggest that if the rich regalia that accompanied him to the grave were indicators of status then that status must have been hereditary rather than earned. On the other hand, he could have inherited the ritual objects from a kinsman or the situation of his death and the power of the ritual objects required special attention by his kinsmen and the band. Regardless of the complex interpersonal social relationships which would have existed within and between bands, there is no convincing evidence for the development of ranked societies in the Lower Great Lakes and Upper St.Lawrence River region at this or at any other time. Indeed, in Southern Ontario the occurrence of the copper and silver pan pipes of the Hopewell mortuary complex are not associated primarily with adult males of presumed high status (Young 1976).

The most compelling evidence in support of special treatment of certain individuals in Late Great Lakes-St.Lawrence society that is indicative of some degree of social inequality is the fact that in the Rice Lake area only a small segment of the population was buried in burial mounds. A limited occurrence of burial mound clusters throughout the extensive geographic distribution of the Point Peninsula complex, however, indicates the practice was a local aberration of normal ritualistic treatment of the deceased. Also, if hereditary ranked lineages existed at Rice Lake, one would anticipate more balanced ratios of infants to adults and females to males in the burial mounds. If certain families had proprietary rights to the wild rice beds, they could have reaped major benefits when the technology to harvest, parch, and store wild rice was developed. In this hypothetical scenario, food surplus in the form of dried rice would equal wealth and wealth could lead to status inequalities for those families which did not have proprietary rights to the wild rice beds. While such a situation is a possibility, it was a very local phenomena basically limited to Rice Lake. It also does not explain the age and gender discrepancies in the burial mounds if the wealth (rice) leading to social inequality resided in the hands of a limited number of families whose members presumably were status equals. The fact that the Rice Lake mortuary elaboration and differentiation relative to other Point Peninsula bands disappeared shortly before definitive archaeological evidence of horticulture may be significant as the latter would have effectively corrected any previous imbalance in control of wealth in the form of food. It is also significant that, even long after burial mound construction had been abandoned, descendant people continued to bury their dead in the same sacred place (Johnston 1968: 66). Perhaps some of the individuals in the mounds belonged to some form of shaman guild. In this instance, archaeologists are unlikely to ascertain the symbolic significance underlying mound burial and the basis of individual selection for interment. It is a paradox that is likely to remain a paradox.

To the west of the Niagara Escarpment in Southern Ontario there were a number of Saugeen regional bands. These were situated along the Saugeen River, the Grand River, the Thames River, the Ausable River, the Nottawasaga River, and in the Long Point region (Finlayson 1977: 560). Regional bands would have interacted with one another permitting family and individual mobility from band to band, the acquiring of spouses, and expanded trade. "It is, then, participation in this alliance or alliance network by a series of communities in southwestern Ontario which leads to the distinctiveness of the Saugeen culture when compared to adjacent Middle Woodland manifestations such as Laurel to the north, Point Peninsula to the east" (Ibid: 561-562).

Within the societies of Late Great Lakes-St.Lawrence culture there appear to have been both the capability and the will to care for physically incapacitated members. During the transition from Period III and IV at the Hind burial site, an individual who died in his/her early teens suffered from an unknown metabolic disorder that left the person chronically ill and dependant upon others for transport and likely even the preparation of food into an easily masticated gruel (Varney and Pfeiffer 1995: 107). Such care giving would likely have been beyond the capabilities of the nuclear family and must have relied to some extent upon the assistance of other members of the society.

It appears that an ancient social system consisting of a local band composed of nuclear families that intermarried and interacted with other local bands to form regional bands which, in turn, interacted with one another, was retained throughout Period IV.

Changes were taking place, however, in the settlement pattern strategy which permitted larger local bands to not only maintain themselves at a single favourable site throughout the spring and summer but also to continue to amass sufficient food surpluses to accommodate winter requirements. This seasonal pattern was likely enhanced by improved storage technology permitting larger and longer seasonal gatherings of people. Although the evidence is still equivocal regarding the increasing importance of plants, there was some increase in gathering as seen in the shell middens of Rice Lake and the southern end of Georgian Bay. In terms of the Rice Lake area, an association between this heightening importance of local food gathering and the proximity to large wild rice (*Zizania aquatica*) beds is not likely to be fortuitous despite the absence of direct archaeological evidence of wild rice. The increasing intensity of such a subsistence and settlement strategy undoubtedly would have preconditioned the Late Great Lakes-St.Lawrence culture people to adopt maize horticulture sometime after AD 500 even though a significant horticulturally based economy would not be realized until approximately AD 800. It is also quite likely that future excavations, applying more sophisticated recovery techniques, will reveal that evidence of the growing importance of plant harvesting and domestication during late Period IV times has been sadly under represented in the current archaeological record.

Limitations in the evidence:

The major limitations in the archaeological record of the Lower Great Lakes and Upper St.Lawrence Valley region are as follows: a majority of large warm weather sites are multi-component where individual components of limited duration cannot be isolated from one another; the use of questionable methods of noncontextual component isolation using typology/material in an effort to cope with the mixed nature of the archaeological deposits; the poor archaeological visibility of the transition from late Archaic to early Woodland which, again, relates to the mixed archaeological deposits at most sites; and, all too frequently, the reliance upon one or two elements of material culture, such as projectile point types and pottery types, to reconstruct the culture history of a region. There are also theoretical problems in addition to the methodological ones whereby, all too often, substantive support of a theoretical proposition appears to be no longer regarded as a necessary component of theory testing. Unlike earlier times, the reduction of archaeological visibility due to fluctuating lake levels or erosional and depositional cycles, do not appear to pose a serious problem but this has been more than exceeded by site destruction resulting from industrial and urban/rural development.

To expand upon the preceding comments, the problem with most of the large archaeological sites in the area under consideration is the hopelessly mixed nature of cultural deposits, often representing thousands of years of human seasonal activity. In order to address this problem, artificial 'components' have been created on the basis of typology and material of manufacture in lieu of clear superpositional or demonstrable component contexts (e.g. Clermont et Chapdelaine 1982; Ellis et al. 1988). A recent perpetuation of this problem has been the treatment of multi-component sites at the first rapids in the Rivière aux Brochets above Lake Champlain (Forget 1996; St.Arnaud 1996). Despite the best of intentions, these efforts have tended to create 'typological straight-jackets' that are inadequate representations of a total assemblage when compared to sites where component isolation is possible. Such preconceived, and, thus, biased typological/material of manufacture cultural constructs, confound the comparative process by focusing only on those objects which are presumed to be 'diagnostic' and ignoring everything else. Even more disruptive to the understanding of past events and cultural processes is the indiscriminate use of a limited number of 'index fossils', such as point types, to reconstruct culture history. All too often such point type identifications are based upon point outline rather than the constellation of attributes that characterized the original typological description of the point type. There is an element of taxonomic chaos in the Great Lakes and upper St.Lawrence River Valley which can only be altered by the development of improved taxonomies, the more rigorous application of these taxonomies, and, above all, basing the reconstruction of culture history upon the total cultural systems which are amenable to archaeological inquiry such as technology, subsistence, settlement pattern, cosmology, and human biology rather than single selected elements of technology. Reconnaissance strategies directed towards the location of single component sites, albeit small and relatively unproductive of material, would undoubtedly contribute to reducing the current confusion concerning what constitutes the totality of a cultural tool kit. A further limitation that applies to the history of archaeological research in both Southern Ontario and New York is related to the exceptionally rich archaeological body of evidence represented by the Iroquoian horticultural villages of Period V. These large villages, with their impressive palisades, longhouses, and artifact-rich middens, have attracted a disproportionate amount of attention from archaeologists in the past. This in and of itself is not to be criticized, but it must be recognized that the less productive archaeological sites prior to AD 500 that constitute more than 95% of the archaeological history of the Great Lakes and upper St.Lawrence River have suffered from severely reduced levels of investigation as a result.

A unilineal model of pottery stylistic development beginning with an Early Woodland cord-impressed pottery leading into a later Middle Woodland dentate stamped pottery, is still advocated by most archaeologists (e.g. Ferris and Spence 1995; Spence et al. 1990). This sequential pottery style developmental scenario is maintained despite the stratigraphic, distributional, associational, and radiocarbon evidence indicating that two separate and essentially geographically discrete pottery traditions are involved.

Two pottery traditions or horizon styles, consisting of an early corded pottery in the south and a dentate stamped pottery in the north, that are, in large part, contemporary better fits the evidence. Where the distributions of the two pottery traditions geographically overlap , they are often found associated on the same sites. The foregoing does not deny that the early cord-impressed pottery appeared sometime prior to the earliest appearance of the dentate stamped pottery but that its adoption throughout northeastern North America was incomplete and in many regions, particularly in Canada, the dentate stamped pottery represents the earliest pottery tradition. On a continental scale, from the Maritime provinces to Manitoba, the earliest pottery consists of dentate stamped styles, including the early pseudo scallop shell variety. In contrast, from the coast of southern Maine to North Dakota the earliest pottery is represented by the cord-impressed pottery tradition. Between these adjacent horizontal east-west bands representing the distributions of the two pottery traditions, there were many opportunities for sharing pottery styles (Wright 1990: 495-496). The main point is that early pottery in eastern North America was not the product of a unilineal development but, rather, that two different pottery traditions were involved. With reference to contemporaneous and related Late Great Lakes-St.Lawrence culture people on either side of Lake Ontario, for example, those on the New York side predominantly followed pottery styles of the southern tradition while those on the Ontario side followed the distinctly different northern styles. The two populations were not less related because of their choice of different pottery traditions. Only in the lower reaches of the St.Lawrence River and along the northshore of Lake Erie did the southern pottery tradition take hold prior to the appearance of the northern tradition. To further complicate matters, the two different pottery traditions were shared to varying degrees at zones of contact for approximately 500 years before the decorative styles and techniques of the northern tradition largely replaced those of the southern tradition. It appears that the role of stimulus diffusion, in the development of pottery styles in northeastern North America, took a quite different direction in the north than it did in the south. The analysis of pottery characteristics has been so heavily relied upon in the reconstruction of culture history in the area that it has been necessary to repeat this fundamental difference of opinion regarding its genesis. All that said, the archaeological record can, on occasion, be perverse and certainly the last word has not been said on this issue from either side of the debate.

Another problem is more theoretical than interpretational. There is the opinion of some researchers that broad cultural classifications such as used in this work, represent grossly erroneous abstractions that somehow inhibit the advancement of knowledge. It is further argued that intensive studies of regionally specific developments provide a more accurate reflection of past reality (Ferris and Spence 1995). Underlying this opinion appears to be the belief that a cultural classification system is somehow absolute and that there is no utility in applying a layered system or hierarchy of cultural classification that incorporate in its layers both mutually complementary narrow and broad views of cultural development. Normative studies, involving the elucidation and explanation of cultural patterns, are also somehow regarded as being inadequate if not outright wrong-headed. Even though some researchers are not happy with the present cultural classifications, they do not offer anything substantive to replace them other than vague talk about lateral melding of regional cultural developments into one another in a presumably unbroken chain. Paradoxically, the presumably inadequate cultural classifications are still being used by their detractors. Complaining about the limitations of earlier classification systems but not offering any real alternative to them (e.g. if you know what is wrong then fix it!) is not unique to archaeology. In a recent review of a publication on the origins of birds it was commented "...the dissenters offer no methods or no opposing theory that can be tested; their theory amounts to an objection to the accepted theory. So it is very difficult for the rest of the community to evaluate or test these objections" (Padian 1997: 178-179).

The Great Lakes and the upper St.Lawrence River Valley regions have benefited from a long history of archaeological research supported by its many provincial and state institutions as well as federal agencies. It has also benefited from the contributions of outstanding archaeological synthesizers, such as the late William A. Ritchie of New York State. Despite the fact that the area has suffered massively from urban and agrarian development, the available archaeological evidence exceeds that of perhaps all other areas of Canada. But this rich body of evidence deserves to be more rigorously analysed and viewed from increasingly broader or, at the least, different perspectives. Constructive moves to improve understanding of Late Great Lakes-St.Lawrence culture would be the following: analyse older collections using current analytical, comparative, and interpretive methods; obtain a series of carefully selected radiocarbon dates in order to strengthen the chronological record and ascertain that the dates are not in conflict with less unstable stratigraphic evidence; initiate archaeological survey and excavation within discrete river drainages to determine the degree of regionalism in the archaeological record; and carry out comparisons within and between geographic areas in an attempt to identify regional bands and to determine their interrelationships (Spence and Pihl 1984). Any refined regional reconstruction of archaeological history, however, should contribute to a broader view of past events and developments, whether it be at a provincial, national, continental, or global level. We are, after all, dealing with the archaeological history of a species whose distribution is worldwide and, therefore, any comparative approach intended to throw light on the human behaviour reflected in that history must cast a very wide net in order to have any general credibility.

CHAPTER 24

LATE EASTERN SHIELD CULTURE

Précis:

Late Eastern Shield culture occupied the Lichen Woodland and Boreal Forest vegetation provinces of the eastern Canadian Shield from the Labrador coast westward into eastern Northern Ontario where it merged with the related Late Western Shield culture (Laurel). Neighbouring cultures included Middle Palaeo-Eskimo culture in close proximity along the east coast and the northshore of the Gulf of St.Lawrence and, more distantly, in the Hudson Bay and Hudson Strait regions, Late Maritime culture in the Gaspé, and Late Great Lakes-St.Lawrence culture in the St.Lawrence lowlands from Québec City into Ontario including the Ottawa River Valley. The interconnected river and lake systems draining the central highlands of Québec would have provided ease of communication via water travel to and from the St.Lawrence River drainage, Hudson and James Bay, and the Labrador coast. There were few physical barriers to cultural contacts between the bands of Late Eastern Shield culture and their neighours. Unfortunately, Late Eastern Shield culture sites are generally represented by a thin veneer of scattered chipping detritus, containing few diagnostic implements and occurring in deposits that are hopelessly intermixed with earlier and later occupations. In northern Québec, for example, Period IV sites are not only rare (Denton 1989: Figure 2), but often cannot be dated either by radiocarbon or typology (Chevrier 1993: 176). The situation in adjacent Labrador is somewhat different in that the archaeological contexts for radiocarbon samples are better but the associated archaeological assemblages are equally limited in content (Fitzhugh 1972; Nagle 1978). Larger and artifact-rich sites in the western Canadian Shield of Québec (Marois et Gauthier 1989) typically contain mixed cultural debris representing thousands of years of seasonal occupations. In response to the small samples and the generally non-existent archaeological contexts that would permit assemblage definition, there has been an understandable temptation to use the scattering of Late Great Lakes-St.Lawrence culture diagnostics found in the region to reconstruct the culture history. This has resulted in much of the archaeological remains pertinent to Period IV, as well as Period III, being assigned to what are here designated Middle and Late Great Lakes-St.Lawrence cultures; particularly so in the

200 to 300 km wide band extending from Lac St.Jean to Lake Abitibi southward to the St.Lawrence and Ottawa rivers (e.g. Côté 1993; Langevin et al. 1995). While there is little doubt that the southern margin of the Canadian Shield was a major zone of cultural interaction between Late Eastern Shield culture and Late Great Lakes-St.Lawrence culture, a scattering of southern 'diagnostics' is not a sufficient basis for reconstructing culture history. When other factors, such as the qualitative and quantitative characteristics of the total tool kit and settlement pattern evidence, are taken into consideration it is apparent that significant differences existed between these neighbouring cultures, albeit blurred by a long history of interaction and exchange. The rudimentary state of classification of stone tools, in part due to an inability to isolate single components, has further exacerbated the comparative process. Another complication was the appearance of new technologies during Period IV represented by the westward spread of the bow and arrow from the east coast and the northeasterly diffusion of pottery vessel manufacturing from the Lower Great Lakes and upper St.Lawrence River basin.

As outlined in Volume I, Middle Shield culture, the ancestor of Late Eastern Shield culture, spread eastward into newly available territories either recovering from the affects of glaciation and its unfavourable biotic aftermath or abandoned by their pervious Middle Maritime culture occupants. Much of Québec and Labrador does not appear to have been occupied by Middle Shield culture until around 2,000 BC with settlement becoming progressively more recent to the north and the east. It was from this cultural base that Late Eastern Shield culture peoples in most of Québec north of the St.Lawrence River and portions of Labrador were derived. People maintained regionally adapted seasonal rounds; some bands, because of their locations, seasonally exploiting coastal resources while other bands subsisted mainly on interior caribou, moose, small game and, in particular, fish.

Both Late Eastern Shield and Late Western Shield cultures developed out of the Middle Shield culture of Period III (4,000 to 1,000 BC). The basis for distinguishing between these two closely related cultures is largely technological as their settlement patterns and subsistence practices were very similar, if not identical, in most instances. Late Eastern Shield culture retained the older stone working traditions of their predecessors whereas Late Western Shield culture continued a late Middle Shield culture development in the west that involved abandoning the use of massive siliceous deposits, such as quartzite and rhyolite, with their resulting large bifacial and unifacial tools, in favour of Hudson Bay Lowlands nodular cherts with their comparatively diminutive tool products. While both cultures made extensive use of local veins of quartz as expedient cutting and scraping chunks and flakes, the practice appears to have been far more common in the east. Late Eastern Shield culture also rejected pottery vessels as an important item in their tool kit unlike their western kinsmen (Thibault 1978). In fact, the limited pottery from Late Eastern Shield sites may simply represent the products of Late Western Shield culture and Late Great Lakes-St.Lawrence culture women moving from their homelands in the west and south to join the bands of their husbands to the north and east. Occurrences of pottery becomes progressively sparse as one advances eastward and northward and thus further away from the homelands of the hypothesized cultures within which it represented a significant element of technology (Moreau et al. 1991: 59). As an example, whereas pottery is common in both Late Western Shield culture (Laurel) and Late Great Lakes-St.Lawrence culture (e.g. Point Peninsula complex) only 14 pertinent pottery sherds are reported from the entire Lac St.Jean area (Moreau 1995: 106 and Table 1). A similar situation existed on Lake Abitibi, straddling the Ontario and Québec border (Marois et Gauthier 1989; Ridley 1966). This progressively fading pattern of pottery vessel distribution to the east maintains itself into Period V (AD 500 - European contact) where the East Cree, Montagnais (Naskapi), and Attikamek of Late Eastern Shield culture territory basically rejected pottery manufacturing unlike their western and southern kinsmen the West Main Cree, Algonquin, Southern and Northern Ojibwa, Western Woods Cree, and the Late Winnipeg Saulteaux. What pottery does occur is clearly related to western styles and was likely a product of women from western bands joining their husbands in the eastern bands.

Subsistence and settlement patterns remain unchanged from the preceding period and, for that matter, were to remain unchanged up to the time of European contact. Sites such as the Chicoutimi site at the juncture of the Saugenay and Chicoutimi rivers (Chapdelaine 1984) contained occupational debris spanning more than 3,000 years and terminated with a historical documented Montagnais occupation. Unfortunately the cultural deposits at this site were hopelessly intermixed. Like other large sites, the Chicoutimi site was a favourable location where a band or, more likely, a number of bands gathered on an seasonal basis.

The relationship of some of the bands of Late Eastern Shield culture with Late Western Shield culture (Laurel) and Late Great Lakes-St.Lawrence culture (e.g. Point Peninsula) appears to have involved women from the latter two cultures moving into Late Eastern Shield culture territory, along with their pots and/or pottery manufacturing knowledge, to dwell in their husbands communities. Occasional ground stone celts and tools manufactured from Onondaga chert, whose geological source is at the western end of Lake Ontario, also indicate contacts to the south and west. Such a relationship mirrors that of Period III and represents a long established pattern of close cultural contact. On a much lesser scale, in the northern interior of Québec small quantities of Ramah quartzite on Late Eastern Shield sites at locales like Lac Caniapiscau (Denton et al. 1980: 296) suggest either trade with Middle Palaeo-Eskimos on the Labrador coast, where the stone source is located, or actual coastal forays by the interior people to the quarries. It is also possible that some of the Ramah quartzite was scavenged from abandoned interior Middle Maritime culture sites. Contrary to Tuck (1976: 59), it is argued that Middle Maritime culture had abandoned the northshore of the Gulf of St.Lawrence and Labrador prior to the end of Period III and that significant contacts do not appear to have taken place across the Gulf where the descendants of the more northerly Middle Maritime people are believed to have retreated. There is also evidence of participation in the Adena mortuary complex. On the northshore of the Gulf of St.Lawrence at Mingan the grave of a young girl was exposed by erosion. The body had been wrapped in bark and was provided with a copper bead necklace. Shell beads were also present and a number of large mortuary biface blades as well as red ochre. Subsequent work at the site has disclosed more graves suggesting the existence of a cemetery. Significantly, early Point Peninsula pottery was present at this site (Clermont 1990: 12-14). A discovery on the central Labrador coast represents the most northerly evidence of participation in the Adena mortuary complex. At the Daniel Rattle site, a cache consisting of 10 end scrapers, a large corner-notched biface blade, an abrader, an unmodified graphite nodule, and a quartz pebble, was found on the surface of a promontory (Loring 1989: 52). It is speculated here that the cache may represent offerings placed in a surface (log covered?) burial where all other evidence of a grave has disappeared except the stone tools. What is of particular interest is that the large corner-notched biface represents a typical Adena mortuary complex item whereas the end scrapers are typical Late Eastern Shield culture tools. All of the stone is of local origin but, unlike the scrapers, the notched biface exhibited no evidence of use.

Cultural origins and descendants:

It has been observed that "Cultural continuities between the Shield Archaic and subsequent developments in the Boreal Forest- Canadian Shield permit the speculation that the Shield Archaic people probably spoke an Algonkian language" (Wright 1972: 87). There would appear to be general agreement with this proposition (Chapdelaine 1985: Tableau 1; Dawson 1983; Laliberté 1982: 69; Martijn and Rogers 1969: Table III). Technology, settlement patterns, and subsistence strategies remain unchanged from at least Middle Shield culture of Period III to the time of European contact. Unfortunately the mixture of thousands of years of cultural debris in the large seasonal base camps in areas of settlement concentration, such as Lake Abitibi (Marois et Gauthier 1989; Ridley 1966) and lacs Mistassini and Albanel (Martijn and Rogers 1969), inhibit efforts to trace technological continuities through time. While Lake Abitibi sites have been radiocarbon dated to Period IV (Marois et Gauthier 1989), assigning the dates to a specific assemblage has not been possible despite the most precise excavation procedures. Similarly, other sites dated to Period IV all suffer from problems of either clear cultural context or accuracy of the association of the radiocarbon sample with the materials to be dated. This problem is endemic to Québec and adjacent Ontario and Labrador. Radiocarbon dated sites, such as GcEl-3 and GcEl-14 on Lac Delorme, GcEl-26a on Lac Capiapiscau, and GeEl-1 on Lac Lemaitre (Taillon et Barré 1987) are examples of such sites as is the Iceberg site on the southern Labrador coast (Tuck 1976). Relatively good radiocarbon sample association with discrete cultural assemblages are recorded at the Smooth Land Point and Hillsbury 3 sites on the central coast of Labrador (Nagle 1978) and the Red Ochre site in Hamilton Inlet, Labrador (Fitzhugh 1972: 81-82). All three sites, however, straddle the transition from Period III to Period IV and produced only small samples. A multi-family dwelling, called a 'shaputuan' in Montagnais-Nascapi, at the Daniel Rattle site on the central Labrador coast has been radiocarbon dated to about AD 250 (Loring 1989). It was proposed that there is "...a strong case for a long in situ development for the prehistoric predecessors of the Innu (Naskapi)" (Loring 1985a: 134). In this work, the in situ development referred to above would pertain to the transition of late Middle Shield culture into Late Eastern Shield culture or, as it is known locally, the early Point Revenge complex. On the northshore of the Gulf of St.Lawrence in Québec, adjacent to the Labrador border, the Blanc Sablon 1 site has been dated to AD 1 (Wilmeth 1978) and is attributed here to Late Eastern Shield culture (Harp 1964: Plate I, a. to n.). This small assemblage included side-notched and small lanceolate projectile points, linear flakes, biface knives, end and flake scrapers. Although the evidence is sparse and the association of radiocarbon samples with discrete assemblages appropriate for comparative purposes is lacking, the Brinex and Charles phases of Hamilton Inlet (Fitzhugh 1972) and equivalent materials from the northshore of the Gulf of St.Lawrence (Harp 1964; Martijn 1974; McGhee and Tuck 1975) do include elements of both late Middle Shield culture and Late Eastern Shield culture occupations as do the central Labrador coast sites (Nagle 1978). It is only a matter of time until appropriate comparative collections will be isolated and archaeologists can assess the degree of regional technological homogeneity or heterogeneity within Late Eastern Shield culture and the nature of technological trends through time. At this time, however, there is simply insufficient evidence to permit a comparative study that could even tentatively outline technological developments throughout the 1,500 years represented by Period IV.

During Period V (AD 500-European contact) the direct historical approach (Steward 1942) can be used to associate the historically documented northern Algonquian-speaking groups with preceding Late Eastern Shield occupations. As has been noted, "Dans tous les cas, la similarité et la persistance sur plus d'un millénaire (1570-210 AA), jusqu'à la période protohistorique, de la technologie lithique et des schèmes de subsistance et d'établissement, nous permettent de croire que les groups étaient probablement les ancêtres des populations algonquiennes actuelles (Cris, Montagnais, Naskapi)" (Nolin

1989: 94). Similarly, the Late Eastern Shield culture occupation of the Mistassini-Albanel region of central northern Québec "... appears to have existed in relative isolation. No abrupt transitions show up in the artifact inventories of any of its major components which could be interpreted as large-scale movements into the area by outside groups. On the contrary, there is a sense of continuity through time" (Martijn and Rogers 1969: 347).

The following sections on the **Technology**, **Settlement patterns**, and **Subsistence** will illustrate why it has been so difficult to clearly define a cultural construct like Late Eastern Shield culture. It has also been difficult to determine relationships of the people with their neighbours, except from some of the more southerly sites, such as the Montreal River site on the headwaters of the Ottawa River (Knight n.d.: 129) and the sites of the Lake Abitibi and Lac St.Jean regions, which acquired minor quantities of pottery, likely through the mechanism of intermarriage with Late Western Shield and Late Great Lakes-St.Lawrence culture bands to the west and the south. A scarcity of cultural diagnostics and single component sites has been compounded by the lack of all bone materials, including sufficient for dating purposes. While the use of bone in radiocarbon dating has some limitations, it does have the advantage of being more clearly attributed to an archaeological feature than charcoal. Charcoal can be easily contaminated, particularly in a region of endemic forest fires. Pertinent radiocarbon dates can be found in Nagle 1978, Tuck 1976 (Labrador), Marois et Gauthier 1989, Taillon et Barré 1987, Wilmeth 1978 (Québec) and Knight n.d. (eastern Northern Ontario).

Technology:

As with Middle Shield culture sites in Period III, the majority of Late Eastern Shield culture sites are represented by a few broken biface fragments, scrapers, some fire fractured rock used in cooking, and abundant chipping debris. A close examination of the chipping debris reveals that much of it was used as expedient tools and, in this respect, the simple flake or quartz 'chunk' should be regarded as the major tool category of the Shield culture tool kit. As if the preceding did not provide sufficient tool classification problems, most sites consist of debris that has accumulated over many seasonal occupations and is now thoroughly mixed in the thin cultural deposits. Typologically diagnostic tools tend to be rare and acid soils have destroyed any bone assemblage that may once have been present. Thus Late Eastern Shield technology is relatively free of the diagnostic tools of other cultures that are traditionally relied upon by archaeologists to identify trends and relationships. What is characteristic of Late Eastern Shield culture technology is the retention of a basic tool kit consisting of end scrapers, bifacial knives, projectile points, certain rough tools such as chopper-scrapers and hammerstones, and linear flakes, as well as an absence or scarcity of ground stone implements. A close examination of the biface knives frequently reveals that they possess scraping as well as cutting edges and, on occasion, even graver spurs. Thus, they are best regarded as multi-purpose tools. One has only to observe a modern Cree with his axe, for example, to see that the tradition of using one tool for many tasks is very much alive and well. Projectile points during Period IV are either side-notched, basally ground dart heads and arrowheads with convex bases and blade edges or small lanceolate and triangular forms. Small to medium sized end scrapers dominate the tool kit, exclusive of the ubiquitous utilized flakes, while bifacially flaked knives are also common.

A difficult challenge facing archaeologists working in the eastern Canadian Shield, as in most of Canada, is the need to identify single components. Unfortunately when isolated house floors, consisting of central hearths of fire fractured rock surrounded by chipping detritus and the odd artifact, are discovered, such as on the central Labrador coast (Nagle 1978), there is simply too little material recovered to permit effective comparisons with other sites. All of the sites that have produced samples adequate for comparative purposes have been multi-occupation seasonal warm weather base camps and quarry sites where geological deposits of desirable stone attracted people. Accepting the fact of multiple occupations at such sites and the mixture of the archaeological deposits through the processes of bioturbation (tree-falls, rodent and human activity, etc.) and cryoturbation (freeze and thaw cycles), it is inevitable that the comparative units extracted will represent variable portions of collapsed time with component mixture an unavoidable consequence. This pertains despite the application of meticulous field excavation methods. For example, a concerted effort was made to isolate comparative components at the Joseph Bérubé site at the eastern end of Lake Abitibi (Marois et Gauthier 1989) but there was simply too much admixture from earlier and later occupations of the site to convincingly identify components. Quarry sites are almost always multi-component and because of the accumulation of tool production debris not infrequently can be isolated into approximate limited segments of time, albeit with a strong quarry activity bias. This was certainly the case with the Yadogami site on the Temiscamie River of north-central Québec. A detailed analysis of the tools from the lower and upper layers permitted a quantitative and qualitative consideration of the assemblages (Martijn and Rogers 1969: 216 and 218). Unfortunately for the time period currently under consideration, the two layers of the Yadogami site appear on typological grounds to pertain to the Middle Shield culture of Period III. Under the circumstances, it is not possible at this time to provide a comparative table outlining the nature and trends through either space or time of the Late Eastern Shield culture tool kit.

Despite problems of component isolation, it appears that northern sites removed from the influences of Late Great Lakes-St.Lawrence culture and other neighbouring cultures possess more homogeneous tool kits than related sites closer to the St.Lawrence River drainage. In northern Québec sites are characterized by a abundance of local quartz detritus, biface knives including fragments, side-notched projectile points, end scrapers, but little or no evidence of fashioning tools by stone grinding (Denton et al. 1980; 1982). Similar assemblages occur on the central Labrador coast (Nagle 1978), on the northshore of the Gulf of St.Lawrence (Harp 1964), and in the Hamilton Inlet area of Labrador (Fitzhugh 1972). In the latter region, the Road site 2 at North West River (Ibid: 147-148) contained thin, square-based, side-notched projectile points in association with end scrapers, bifacially flaked knives, combination knife-scraper tools, and random flake scrapers. The site is estimated to date to around 700 BC on the basis of the similarities between the projectile points and the side-notched Meadowood projectile point type of Late Great Lakes-St.Lawrence culture (Meadowood complex). It is likely that the Road site 2 side-notched points represents an example of the adoption of the bow and arrow weapon system from coastal Middle Palaeo-Eskimos. In connection with this hypothesized technology transfer, it is also pertinent that the Road site 2 is the earliest site in the Hamilton Inlet region to make significant use of the Ramah quartzite from northern Labrador. On the central Labrador coast a tool kit composed of convex based side-notched projectile points, small triangular points, bifacial knives, end and oval scrapers, random flake scrapers, drills, and linear flakes (Nagle 1978: 142) exhibits close parallels with the assemblages from the interior of Québec. Along the northshore of the Gulf of St.Lawrence Late Eastern Shield culture may have occupied the territory to the west of Sept-Îles while there appears to have been a possible cultural hiatus to the east (Chevrier 1977: 118). Late Eastern Shield culture also appears to represent the major occupation of the Chicoutimi site on the Saugenay River with "L'assemblage peut être contemporain des périodes archaïque ou sylvicole" (Chapdelaine 1984: 100).

The situation along the southshore of the Gulf of St.Lawrence is far from clear. A proposed phase of the Gaspé tradition (Benmouyal 1987), that occupied the region during Period IV, is based upon limited evidence. The 100 BC Ruisseau A site produced stemmed, lanceolate, and bipointed projectile points, lanceolate knives, and abundant flake tools such as end scrapers and large oval scrapers. Materials from this site and other sites in the area contain abundant evidence of tool production which can create a false sense of technological homogeneity. Late Gaspé materials appear to be related to the same chipped stone tool tradition as Maritime culture with the addition of some minor new traits such as Point Peninsula pottery (Dumais 1978: 63) and, in this respect, is assigned to Late Maritime culture (see Chapter 22). With reference to the weak penetration of pottery into the lower St.Lawrence it has been observed that "Il avait interprété ce phénomène comme une diffusion possible de traits technologiques du Sylicole provenent de l'ouest et/ou sud sur des groupes de tradition Archaique de l'est" (Dumais 1978: 72). Further upriver, along the northern tributaries of the St.Lawrence

River, many sites flooded by hydro-electric projects have produced abundant Late Eastern Shield culture materials such as side-notched projectile points, end scrapers, biface knives, linear flakes, and the occasional Point Peninsula pottery vessel (Ribes et Klimov 1974). Some of this material would relate to the period in question but cannot be isolated into assemblages. Until such components are identified across the enormous expanses of the eastern Canadian Shield the nature of Late Eastern Shield culture technology must remain tenuous, supported as it is by extrapolation from the better demarcated assemblages of the Middle Shield culture of Period III and the Northern Algonquian culture of Period V.

Subsistence:

With the exception of occasional small fragments of calcined bone, all bone material on Late Eastern Shield culture sites has been dissolved by acid soils. As a result, settlement pattern evidence must be relied upon to infer subsistence practices. Site distributions suggest that the highly adaptable and opportunistic system documented historically for the northern Algonquian-speaking bands of the eastern Canadian Shield was essentially the same as that of the preceding Middle and Late Eastern Shield cultures. Summer base camps often contain evidence of seasonal occupations extending unbroken from Middle Shield culture times to the present, spanning 4,000 or more years. Quarry sites exhibit a similar continuous pattern of use through time. Within this broadly based and flexible subsistence system there were two major types. Northern bands, who were either too distant from maritime resources for practical seasonal commuting or whose access to the coast was blocked by other people, would have relied upon interior resources; mainly caribou and fish supplemented with small game and birds. In more southerly climes, a wider range of game animals as well as fish would have been available. Bands situated on drainages flowing to the sea established a seasonal round involving the combined exploitation of both maritime and interior resources.

The location of sites along the coast and inlets of Labrador and the northshore of the Gulf of St.Lawrence (Fitzhugh 1972; Harp 1964; Martijn 1974; Nagle 1978) suggest that fish and seal were probably caught during spring and summer while caribou were hunted in the interior during the winter. On the central Labrador coast, the spring to summer seasonal exploitation of the inner coast and its islands (Nagle 1978: 140) was essentially the same as that historically recorded for the Montagnais/Naskapi. Documented Montagnais seasonal rounds (Henriksen 1973) consisted of interior caribou hunting from the late fall to early spring, seal and bird hunting on the coast in the spring with some fishing on the inner waterways, increased fishing activity as the summer progressed, and the hunting of seals, birds, and some fishing at the head of bays awaiting freeze-up after which there was a shift into the interior again in search of caribou. On the assumption that some of the faunal evidence from the Chicoutimi site on the Saugenay River also pertains to the Late Eastern Shield culture (Shield Archaic) occupation of the site (Chapdelaine 1984: 125), it can be speculated that water transport was used during the summer to bring entire seal, caribou, moose, and beaver carcasses to the site from a number of distant and different ecological locales. The scarcity of fish remains at this particular site is puzzling but may pertain to preservation, processing, disposal (fed to dogs) factors rather than being an indication of the importance of fishing.

In the northern interior of Québec, at sites such as those on Lac Caniapiscau, it has been suggested that fishing activities took place mainly during the summer followed by caribou hunting in the winter (Denton 1981: 62). A similar pattern appears to pertain to the southern interior regions, particularly on the headwater lakes draining into the St.Lawrence River. Major summer base camps would be established at favourable fishing locales followed by dispersal in small, mobile family groups for the winter. It is anticipated that much of the fishing activities at these summer camps would have been the responsibility of the women and that the hunters spread out along the drainage systems in search of big game and to carry out other resource acquisition activities such as canoe building, stone tool rejuvenation, and trade. It is cautioned that the preceding generalizations would have been subject to many exceptions depending upon local factors and situations. For example, a successful caribou pound could have resulted in periodic large concentrations of people during the winter or a natural depletion in big game, such as moose or caribou, could force a greater reliance upon fish and other foods.

Even if bone preservation existed in the Canadian Shield there are important aspects of subsistence that would be missing from the archaeological record. With reference to the Middle Shield, Late Eastern Shield, and Late Western Shield cultures and their Northern Algonquian descendants of Period V, it is important to heed the words of a West Main Cree elder to the affect that "You can depend on fish more than any other. You can be certain that you will get a fish" and the peoples "...first priority is to select the area where there is plenty of fish, and, where there is a good place, they will set a fish trap" (Lister 1993: 274). As it has been historically documented that fish remains were fed to the dogs, the importance of fish to the people may have been eradicated from the archaeological record even before acid soils could do their work. Similarly, the importance of plant foods cannot be evaluated as they rarely survive in the archaeological record. Hudson Bay Company archives indicate that native women were well aware of the need for a supply of dried berries in order to avoid the ravages of scurvy during the long winter. Cranberries, gooseberries, and, in particular, black currants, are rich in the Vitamin C which is necessary as a vitamin supplement to the winter meat diet in order to avoid scurvy (Decker 1989). The foregoing two examples regarding the uncertainty of encountering two important northern foods and vitamin supplements in the archaeological record, fish and berries, requires archaeologists to treat their empirical evidence as a very incomplete record of what people ate and in what quantities.

Settlement patterns:

Site distributions in the interior of much of northern Québec suggest small temporary family camps where tools were manufactured and the usual transitory camp activities carried out (Laliberté 1979). Camps are often concentrated at favourable fishing locations that likely represent the summer gathering place of the band. Such gatherings do not always concentrate at a single site but often consist of widely dispersed small camps within a restricted region where easy communication between the camps was possible. I once asked an Ojibwa man on Lac Seul in Northern Ontario why there were so many scattered small family camps along the southshore of the Lake rather than a single concentrated settlement at the Hudson Bay post on the northshore. With kindly patience of my ignorance he informed me that such a pattern not only conserved firewood but it permitted people to visit others at their own inclinations. Small sites represented by hearths of fire fractured rock, abundant quartz detritus and little else, situated on top of dendritic esker and moraine systems (Denton et al. 1980: 294), likely pertain to fall and winter camps where some elevation was necessary for the sighting of game. Irregular topography would also have provided natural entrapment areas and stalking cover. There is sparse evidence of exotic stone, such as Ramah quartzite, on the northern interior sites. Indeed, the extensive use of local stone suggests that far-flung contacts with other groups were limited.

In the Temiscamie region of lakes Mistassini and Albanel the following classification of sites has been proposed: small travel/kill camps along waterways containing a limited number of tool varieties; seasonally exploited multi-family fall and spring habitation sites with occasional hearths and pits and many tool varieties; workshop sites with abundant chipping debris, cores, and blanks; portage camps; look-out sites on high elevations with little material; and combination habitation-workshop sites (Martijn and Rogers 1969: 315-316). None of the above, however, can be associated with winter settlement and presumably this mainly consisted of a family or small groupings of related families dispersing into winter hunting territories. As was the case with regions like Lac Caniapiscau, the Temiscamie area produced very little evidence of exterior contacts in the form of exotic stone materials and the tool kits are dominated by the local quartzite. The distinctive Mistassini quartzite, however, is frequently encountered on sites along the St.Lawrence River and its tributaries (Langevin et al. 1995: 315;

Wright 1994) and therefore there were probably periodic visits to southern areas such as Lac St.Jean for trade, ceremonial events, marriage arrangements, etc. Given the mobility of the small groups of Late Eastern Shield culture people and the ready travel routes provided by the system of interconnected lakes and rivers it will be difficult to determine if exotic goods were passed from hand to hand through intermediary bands or were acquired directly by groups of people who were accustomed to wide ranging travel. Likely both mechanisms for the transportation of goods pertained.

In the more westerly interior of Québec and eastern Northern Ontario, on the lakes and rivers draining south to the St.Lawrence and Ottawa rivers, site excavations have focused on the summer base camps where continuous seasonal occupations extending from Middle Shield culture times to the present have resulted in rich but all too often hopelessly mixed archaeological deposits (Marois et Gauthier 1989; Pollock 1976; Ridley 1966). In eastern Northern Ontario, occasional stratified sites, such as the Montreal River site (Knight n.d.), have provided opportunities for component isolation. Such sites, however, are most definitely the exception to the rule. Far more typical are the Joseph Bérubé site on Lake Abitibi in Québec with its lengthy occupation being represented by shallow deposits of mixed cultural debris.

Late Eastern Shield sites on the central Labrador coast are found only on the inner coast and protected inner islands suggesting spring to summer camps established to exploit fish, seal, and birds (Nagle 1978: 140). A number of sites became quite extensive through the process of repetitive seasonal occupations. Single occupations generally consist of hearth floors of fire cracked rock with tools and chipping detritus concentrated in and around the 1 to 2 m circular hearths. Presumably such features represent the remains of former tent dwellings. Mugford chert from north of Okak on the Labrador coast (Gramly 1978) is the most common chipped stone material recovered from these central Labrador coastal sites (Nagle 1978: 127). In the fall people would have moved to the interior to hunt caribou. On the northshore of the Gulf of St.Lawrence in Québec and Labrador Late Eastern Shield sites are often situated near stream mouths overlooking the Gulf. Although no bone survives the site locations suggest that seal, salmon, and capelin were the major attractions (Harp 1978: 123). Some sites, such as the Road Site 2 in Hamilton Inlet (Fitzhugh 1972: 147-148), believed to represent summer fishing camps, have produced "...significant amounts of Ramah chert..." suggesting possible contact with contemporary Middle Palaeo-Eskimo peoples on the coast (Nagle 1978: 123). Ramah, Mistassini, and Brador quartzites, Onondaga chert from the west end of Lake Ontario, and jasper from Pennsylvania, were all recovered from the Chicoutimi site on the Saguenay River (Chapdelaine 1984: Fig.21, 147) but given the mixed nature of the deposits it is impossible to say how much or what of these materials relate to the Late Eastern Shield occupation.

The record of continuous human use of both specific sites and geographically limited locales as summer base camps from earliest times to the present throughout the forested regions of the Canadian Shield reflects a settlement pattern keyed to a relatively predictable food (fish) and a reliance upon a system of interconnected waterways where hunters could range out from the base camps in search of big game while the women and older people remained at the main camps to process fish and carry out other tasks. A sexual division of labour involving women catching and processing fish and men hunting along the waterways for big game during the warm weather months remained unchanged for thousands of years. This more eloquently than any other body of evidence points to the stability of the fish populations in the Canadian Shield. Unlike the summer base camps, winter settlement is poorly known. The difficulty of recognizing winter sites would relate to their small size and the likelihood that they were frequently located on or adjacent to frozen waterways that were used as winter roads for snowshoe and toboggan travel. Such sites, of course, would be washed-away with the spring thaw.

An exceptional discovery pertinent to Late Eastern Shield culture was a multi-family longhouse or 'shaputuan' excavated at the Daniel Rattle site overlooking a protected inner channel of the central Labrador coast (Loring 1989: 49). Demarcated by cultural debris and a hearth, the structure was estimated to measure 8 by 4 m while the linear, elevated hearth was 4.5 by 1 m and composed of ash, charcoal, flakes and biface fragments, many fractured by fire. Almost all of the flakes and stone tools were manufactured from Ramah quartzite obtained from deposits nearly 400 km to the north. Tools included lanceolate points, biface knives, end scrapers, large random flake scrapers, and flake knives. Two radiocarbon dates from the longhouse hearth suggest a corrected calendar age of approximately AD 250. This would constitute the earliest archaeological evidence of a type of dwelling first recorded in the eastern Canadian Shield by European observers.

Cosmology:

Late Eastern Shield culture had some limited involvement with the Adena mortuary complex as indicated by a site on the northshore of the Gulf of St.Lawrence at Mingan (Clermont 1990: 12-14; René Levesque, Ste. Foy, Québec: personal communication and specimen examination). At this site the grave of a young girl was exposed by erosion. The body had been wrapped in bark and provided with a copper bead necklace. Shell beads, large mortuary biface blades, and red ochre were also present. Subsequent work at the site revealed other graves suggestive of a cemetery. Late Great Lakes-St.Lawrence culture pottery (Point Peninsula complex) was also present (Clermont 1990). The occurrence of such a burial on the northshore of the Gulf of St.Lawrence is not too surprising given the discovery of a related burial at Québec City (Clermont 1976). What was surprising was the discovery of a cache at the Daniel Rattle site on the central Labrador coast (Loring 1989: 52). Here a surface cache consisting of 10 end scrapers, an abrader, unmodified graphite and quartz nodules, and a large corner-notched biface blade, was recorded. All the chipped stone tools were made from local chert. The surprising item in the cache was the large notched biface blade which is a virtual duplicate of an Adena mortuary complex mortuary biface form (Figure 71). The notched biface also lacked any evidence of use unlike the scrapers, the latter being typical Late Eastern Shield culture forms. While this feature has been interpreted as a tool cache it is speculated here that it may pertain to a surface burial, possibly placed in a wooden grave house, from which all evidence of bone has disappeared except for the stone grave offerings. The cache location on the top of a promontory with a broad vista would also meet a common burial site requirement. It is of interest that the only object attributable to Adena mortuary complex influences was the large corner-notched biface blade. Regardless of whether this cluster of tools represents an tool cache that was not retrieved by its owner or the remnants of a grave, the replication of an alien mortuary tool form on the coast of Labrador suggests Adena mortuary complex influences. It is worth noting that similar caches of tools that have been interpreted as graves have been recorded for Middle Shield culture sites in Québec, Ontario, and Manitoba (Wright 1995: 286-291).

It is probable that the enigmatic stone boulder/slab structures known to extend from southeastern Manitoba across Northern Ontario into the Ottawa Valley will be eventually found in the western territories of Late Eastern Shield culture. These features were discussed in Chapter 16 of Volume I. Evidence from the northshore of Lake Superior, in particular, (Dawson 1979; 1981a) suggests that such features were constructed throughout a lengthy span of time including Period IV. In lieu of any other reasonable explanation, it has been inferred that the stone pits and structures, isolated, for the most part, on elevated cobble and shingle beaches, relate to the vision seeking quest historically documented to have been so important to youths coming of age. It was through a process of isolation, exposure and deprivation, and constant prayer that a person acquired their 'Guardian Spirit' who would provide spiritual help throughout the individual's life. While such features appear to be restricted to the European documented territories of the Ojibwa and Algonquin, with no evidence of their presence further north and eastward into contemporary Cree and Montagnais territories, it would be surprising if there were not some marginal participation in the practice by the western bands of the Late Eastern Shield culture. Such stone features are not easy to recognize, particularly on elevated cobble beaches overgrown with vegetation.

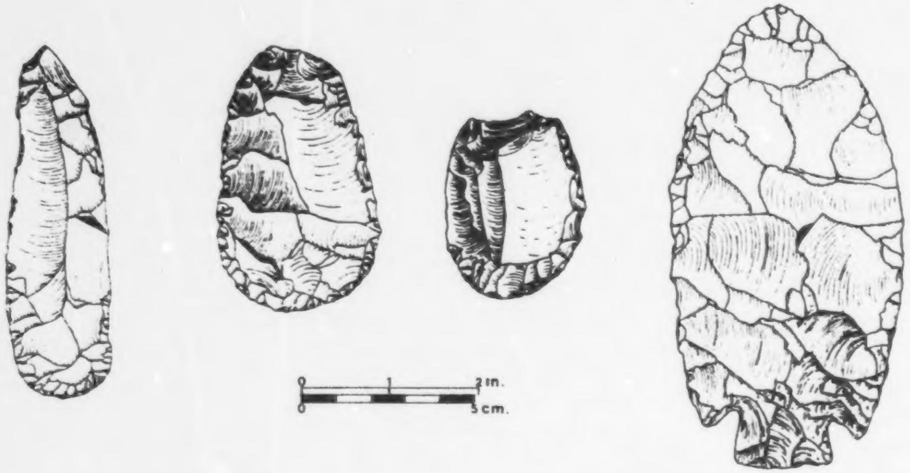


FIGURE 71: THE DANIEL RATTLE SITE CACHE While the three end scrapers to the left are typical of Shield culture including Late Eastern Shield culture, the corner-notched biface blade to the right is a copy in local chert of a typical Adena mortuary complex mortuary biface blade form and is indicative of Ohio Valley related influences extending as far north as the central Labrador coast. (Adapted from Loring 1989: Figure 5 with the permission of Dr. Stephen Loring, National Museum of Natural History, Smithsonian Institution)

External relationships:

Contemporary neighbouring cultures of Late Eastern Shield culture were Middle Palaeo-Eskimos who occupied most of coastal Québec and Labrador, Late Maritime culture in the Maritime provinces and the Gaspé, Late Great Lakes-St.Lawrence culture in the St.Lawrence lowlands of Québec and Ontario, and Late Western Shield culture to the west in the Canadian Shield.

Despite the fact that Late Eastern Shield and Middle Palaeo-Eskimo peoples occasionally exploited the same territories, including quarries and even the same beaches (Nagle 1978: 126), there is no direct evidence of culture contact. In fact, the scarcity of Middle Palaeo-Eskimo sites along certain portions of the Labrador coast has been attributed to the presence of hostile Late Eastern Shield seasonal occupants (Nagle 1978: 143). There is evidence that during most of Period IV the Late Eastern Shield interior bands of Labrador and eastern Québec made extensive use Ramah quartzite for the first time. Even though the Ramah deposits of the northeastern coast of Labrador were in Middle Palaeo-Eskimo territory it is possible that interior bands of Late Eastern Shield people made direct incursions onto the coast to obtain the stone rather than trading with local Middle Palaeo-Eskimo populations. Thus, there may not have been any close economic and social interactions between the two cultures (Loring 1985a: 134-135). Late Eastern Shield culture seasonal exploitation of the Labrador coast concentrated on the protected inner channels and islands of the coast and would not necessarily have been in direct competition for resources with the contemporary Middle Palaeo-Eskimo hunters of the outer coast. If the Ramah quartzite was obtained through trade with Middle Palaeo-Eskimos there is no evidence of what was being exchanged in return although important trade items like furs and hides would leave no archaeological trace. Although Middle Palaeo-Eskimo people generally made their tools from fine grained cherts on some occasions Ramah quartzite was used (Pintal 1994: 153-154) so it was not a case of complete indifference to the resource on the part of the Palaeo-Eskimos. The excavation in clear context of an AD 500 Point Peninsula pottery sherd from a stratified Middle Palaeo-Eskimo site in Newfoundland (Penny 1981) more likely reflects contacts with Late Eastern Shield culture people in possession of the pottery rather than any direct contact with Late Great Lakes-St.Lawrence culture people.

Unlike the situation with Late Maritime culture on the Gaspé coast where there is no indication of contact, there is considerable evidence of interaction between Late Eastern Shield culture and Late Great Lakes-St.Lawrence culture. This relationship was simply an extension of close contacts established during Period III. The clearest evidence of contact is in the form of occasional Point Peninsula pottery vessels along the northshore of the Gulf of St.Lawrence into Labrador and up the northern tributaries of the St.Lawrence River into the interior of Québec and eastern Northern Ontario. The frequency of these vessels diminishes as one proceeds to the east and north and, thus, further away from the lower Great Lakes and upper St.Lawrence River region. It is inferred that the distribution of such vessels was the product of intra-band marriages involving women from more westerly bands who were participating in a pottery tradition of Late Great Lakes-St.Lawrence culture. The extent to which pottery vessels were being brought into the eastern Canadian Shield by women or were being manufactured locally could possibly be determined by neutron activation analysis of the vessels to determine the chemical components of the clay used in their manufacture (Crépeau et Kennedy 1989). In addition to the pottery, certain exotic stone materials, particularly Onondaga chert from the western end of Lake Ontario, are common in western Québec and eastern Northern Ontario. Less common are ground stone celts and slate gorgets characteristic of Late Great Lakes-St.Lawrence culture. On the other side of the exchange are the Mistassini quartzite and Hudson Bay nodular cherts that have been identified from sites in the St.Lawrence River Valley (Wright 1994). As research is expanded in matching the petrographic and chemical characteristics of siliceous stone varieties used in tool manufacture to geological deposits it is likely that closer relationship will be demonstrated between the populations making up some of the bands of Late Eastern Shield culture and Late Great Lakes-St.Lawrence culture. Indeed, in regions to the south of a line between Lac St.Jean and Lake Nipissing there have been difficulties in establishing a clear boundary between the two cultures.

There is evidence that Late Eastern Shield culture bands interacted with Late Western Shield culture. As both cultural constructs arose from Middle Shield culture, such a relationship is not surprising. While Late Western Shield culture (Laurel), as an integrated technological assemblage and not simply isolated traits such as pottery vessels has been only recorded to date as far east as the Lake Nipissing region, pottery styles are reported eastward to Lac St.Jean (Moreau et al. 1991: 52). Between Lake Nipissing and Lac St.Jean both Late Western Shield culture and Late Great Lakes-St.Lawrence culture pottery styles can be found together on the same sites. For example, the occupation stratum at the Frank Bay site on Lake Nipissing called the "Point Peninsula stratum" (Ridley 1954) actually appears to have contained more Late Western Shield culture pottery styles (Laurel) as well as a stone tool assemblage more characteristic of the western culture than the Point Peninsula complex. There is no doubt, however, that Point Peninsula pottery traits were present such as rocker stamping. In fact, in this extensive area the mixture of pottery styles is so characteristic that the chipped stone tool kit is probably a more reliable indicator of cultural relationship. It has been on this basis that the Frank Bay site occupation has been assigned to Late Western Shield culture. While it undoubtedly frustrates archaeologists in their efforts to establish precise cultural classifications, the interplay of cultures in the region between Lac St.Jean and Lake Nipissing promises to provide an extremely interesting area within which to study culture contact situations and the resulting technological exchanges and amalgamation. As was the case with the Late Great Lakes-St.Lawrence culture (Point Peninsula) pottery found on Late Eastern Shield culture sites, the western Canadian Shield pottery (Laurel) is regarded as evidence of band intermarriages with women from the west taking their pottery with them when they travelled eastward to reside in the bands of the husbands. A reciprocal movement of eastern women to more westerly bands would, in lieu of pottery, be difficult to detect. As scrapers are often inferred to have been a woman's tool perhaps a research project oriented to the finger-printing of stone scrapers to geological source would throw light on the matter.

Human biology:

The acid soils of the Canadian Shield have determined that knowledge relating to Period IV human biology currently stands at zero. There is, however, the possibility for preservation of human remains in the limestone enriched carbonate soils of the Hudson Bay Lowlands and certain sections of the northshore of the Gulf of St.Lawrence. Permission for physical anthropologists to study such possible remains, however, will require the approval of the local native population.

Inferences on society:

Inferences regarding Late Eastern Shield culture are the same as those presented for Middle Shield culture in Volume I. Settlement patterns indicate a band level organization. In summer, bands concentrated at favourable fishing locations where the women could trap and process fish and gather essential foods like berries, while men coursed the interconnected waterways in search of big game and other animal, plant (e.g. birch bark), and mineral resources. The veneer of Late Great Lakes-St.Lawrence (Point Peninsula) and, less common, Late Western Shield culture (Laurel) pottery vessels along the northshore of the St.Lawrence River and its southward flowing tributaries and headwater lakes (Moreau 1991: 59; Thibault 1978; Wright 1982) have been interpreted as the product of band intermarriages where women from southern St.Lawrence lowlands bands and the western Canadian Shield introduced their pottery vessels into the none pottery using eastern bands. Such a situation would suggest that the bands were patrilocal wherein a wife moved to her husband's household and band. This, in turn, would argue for a patrilineal form of social structure whereby descent was traced through the male line. Such an interpretation, however, could be simplistic. Seventeenth century documentation describes social organization prior to major European influences as involving associations of three or four families numbering between 15 and 20 people that functioned as the basic social and economic unit. Several such family groupings, numbering some 50 people, would stay within mutual assistance range of each other throughout the winter. After spring breakup, two or more of these larger family groupings, numbering from 150 to 300 people (the band), would come together and interact to varying degrees during the warmer weather (Rogers and Leacock 1981: 179-184). In the face of the ever present need to be adaptable and to seek expedient solutions to situations as they presented themselves, it is likely that a range of changing residential practices prevailed. Early documentation, for example, records that residence was matrilocal whereby the husband went to live with his wife's people (Leacock 1981: 191). There is also suggestions that inheritance through the female line was preferred.

One cannot expect a rigid social structure in Subarctic people subjected to all of the vagaries and hardships of eking a livelihood out of the Subarctic landscape.

Limitations in the evidence:

The chronic problem with most archaeological sites in the Canadian Shield is that "...les occupations recéntes ont partiellement dérangé les occupations plus anciennes (voir fig.25), nous sommes dans l'impossibilité de connaïtre avec précision l'association artéfactuelle du foyer daté" (Denton et al. 1980: 296). Despite meticulous efforts to control the collapsed time dimension at such sites (e.g. Marois et Gauthier 1989), convincing results have not been forthcoming. In terms of technology, only the stone tool assemblage and the odd copper item have survived the acid soils. In the absence of bone preservation, subsistence inferences must be based upon the locations of sites. Within the settlement patterns system the winter segment is virtually unknown, either as a product of its archaeological invisibility or, quite likely, its destruction as a result of lodges being situated on frozen streams and other waterways, which in winter were the highways but come spring disappeared with breakup. A problem has arisen from a reliance upon the technologies of cultures outside of the Canadian Shield to reconstruct culture history and to actually attribute the occupation of portions of the region to these outside cultures. Cultural comparisons have also tended to focus on the cultures of the mixed hardwood forests of the St.Lawrence lowlands and the lower Great Lakes rather than eastward to the Atlantic coast. The identification of the Meadowood complex of Late Great Lakes-St.Lawrence culture in the Canadian Shield, for example, has been based upon the presence of the Vinette 1 pottery style, Meadowood type arrowheads, the products of the distinctive preform technology, and the presence of western Onondaga chert. This has been done regardless of associated materials that do not pertain to Meadowood technology, such as Point Peninsula pottery and has even caused some confusion when the Meadowood side-notched points were made of materials other than western Onondaga chert (e.g. Côté 1993: 13). Archaeological contexts and associations, as well as the nature of all of the observable cultural systems, need to be applied to the issue of whether some Meadowood 'diagnostic' traits indicate the actual presence of the Meadowood complex or simply the trade or diffusion of Meadowood materials or the presence of southern women in the community along with their distinctive pottery.

Despite being one of the most thinly populated regions of Canada, the territories of Late Eastern Shield culture have suffered massive site loss due to hydro-electric developments ranging from Manicouagan to Churchill Falls to, most recently, the Baie James Project. Human settlement at all times of the year was centred on the river-lake

BLACK AND WHITE PLATE XXX: ARCHAEOLOGICAL VISIBILITY IN THE CANADIAN SHIELD While winter dwellings were probably more substantial, the summer dwellings most likely to be encountered on sites excavated by archaeologists were likely flimsy affairs leaving little trace. The lodge frame shown above would have once been covered with rolls of stitched together birch bark that would be rolled up and taken away for use at the next camp leaving just the pole frame of the dwelling. Such a pole framework would be unlikely to leave a clear archaeological record of its former presence. The bark canoe below was essential for warm weather travel and transportation of people and goods. Archaeological evidence of dwellings is limited and with reference to canoes, nil. The main point is that most of the sophisticated technology that permitted survival in the Subarctic of the Canadian Shield was based upon wood, bark, and hide products that do not survive the passage of time. (Reproduced from Wright 1976: Plates 18 and 16)

network; exactly the areas most vulnerable to the creation of reservoirs of such scale that they can be seen from outer space. Only the Baie James Project has made a concerted effort to mitigate the impact of development on the archaeological heritage.

CHAPTER 25

LATE WESTERN SHIELD CULTURE

Précis:

Late Western Shield culture (née Laurel) should be viewed relative to the exceptional expanse and variety of territory occupied. On an east-west line, the culture was distributed from the border of Québec, across Northern Ontario, throughout much of Manitoba and into east-central Saskatchewan, a straight line distance of more than 1,600 km. It occupied lands as far to the south as northern Michigan and Minnesota. This expanse of territory incorporated the northern and eastern margins of the Great Lakes-St.Lawrence Forest and the Parklands, respectively, and the Boreal Forest and Lichen Woodland vegetation provinces (McAndrews et al. 1987). Vegetation provinces are characterized by different compositions of plant species within which animal resources become increasingly impoverished as one advances to the north. For example, people in the southwestern portion of the Late Western Shield culture distribution had access to extensive stands of wild rice as well as Parkland animals such as bison. Accordingly, the density and size of archaeological sites decreases along a south to north cline reflecting the decreasing carrying capacities of the more northern ecological zones.

Critical to Late Western Shield culture were the interconnected lake and river systems of the Canadian Shield and adjacent regions. Like their Middle Shield culture forbearers, people would have depended upon watercraft; presumably the birch bark canoe although no trace of this element of technology has survived in the archaeological record. Major water routes tend to be oriented along the east-west axis. For example, the upper Ottawa River connects to Lake Huron, thence to Lake Superior and westward via the Boundary Waters system between Ontario and Minnesota to the Winnipeg River and Lake Winnipeg. From this east-west main axis numerous routes provided access toward Hudson Bay to the north, westward via the Saskatchewan River, and south along the Red River. Changing environmental conditions favoured the Late Western Shield culture spread into the Rainy River and Winnipeg River regions, most of Manitoba, and the northern Manitoba and Saskatchewan area near The Pas. The foregoing regions were originally occupied by Plains cultures but increasingly moist and cool weather between 1,500 and 500 BC (Buchner 1979) led to a significant southwestern and western expansion of the Boreal Forest at the expense of the Parkland vegetation province with its bison herds. As the bison shifted westward with the retreating Parklands Plains culture bison hunters abandoned large areas to the east which were subsequently reoccupied by the forest adapted Late Western Shield hunters and fishermen.

There is a consensus that Late Western Shield culture descended from the preceding Middle Shield culture. Occupations by the two cultures frequently appear on the same sites, either separated stratigraphically or, along the northshore of Lake Superior, isolated from one another on elevated beaches by isostatic rebound, a process whereby the Earth's crust slowly recovers over a long time after having been depressed by the massive weight of glacial ice. As noted, most of extreme southwestern Northern Ontario, adjacent Manitoba, and all of east-central Saskatchewan had been previously occupied late in Period III by Middle Plains culture. The timing of the cultural replacement is a matter of some controversy. Late Western Shield culture (Laurel) introduced pottery into the area and much of the debate has centred around the antiquity of the pottery and the validity of presumed associated radiocarbon dates. Based upon the hypothesis that Late Western Shield pottery was obtained by diffusion from Late Great Lakes-St.Lawrence culture of the Lower Great Lakes (Wright 1972a: 59), it has been estimated that its introduction into the Canadian Shield could have taken place as early as 700 BC. This would presuppose that the earliest pottery will occur along the southeastern margins of the Late Western Shield culture distribution. Others would argue for a Rainy River region point of origin for the earliest pottery (Reid and Rajnovich 1991: 228). Most archaeologists also regard the initial appearance of pottery and, thus, the transformation of Middle Shield culture into Late Western Shield culture, as having taken place somewhere around 200 to 300 BC (Buchner 1979; Dawson 1983a; Reid and Rajnovich 1991). The radiocarbon evidence is still sufficiently equivocal, however, that archaeologists can indulge in ingenious reasons for rejecting or accepting dates relative to their particular working hypotheses. On the basis of a large number of late radiocarbon dates, for example, it has even been argued that Late Western Shield culture was contemporary for some 300 years with the Northern Algonquian culture of Period V (Blackduck complex) (Reid and Rajnovich 1991) contrary to the physical evidence from stratified sites and the separation of the two cultures on different elevated strandlines by isostatic rebound along the northshore of Lake Superior. Suffice to say, there is agreement that Late Western Shield culture was the ancestor of the Ojibwa and the western Cree. It is noteworthy that the distribution of Late Western Shield culture in Period IV correlates closely with the distribution of the foregoing Northern Algonquian peoples of Period V.

For approximately the first third of Period IV (1,000-500 BC), Late Western Shield culture is inseparable from its Middle Shield culture Period III ancestral base. Around 500 BC, and probably earlier in the southeastern portion of the cultural distribution, a number of important technological changes took place. Pottery was introduced. Also by this time the bow and arrow weapon system appears to have largely replaced the earlier spearthrower. The latter development was a continuation of a process which began on the east coast towards the end of Period III. Technological trends noted in Middle Shield culture times are continued, such as the increasing frequencies of a wide variety of scraper forms, the decrease in numbers of biface knives, the scarcity or absence of ground stone tools, the use of native copper for the manufacture of a range of utilitarian and ornamental items, the frequent occurrence of red ochre nodules, the continuing production of linear flakes, and the sporadic appearance of stone netsinkers. Unlike the preceding Middle Shield culture situation, however, a rich bone tool technology has managed to survive in the form of beaver incisor knives, awls, toggling and unilaterally barbed harpoons, and minor items such as snowshoe netting needles, beads, and pottery decorators. Recent discoveries in north-central Manitoba now suggest that an elaborate bone technology once existed in Middle Shield culture (David Riddle, Historic Resources Branch of the Department of Culture, Heritage and Citizenship, Manitoba: personal communication).

Efforts to reconstruct Late Western Shield culture history have tended to overemphasize the importance of pottery. Paradoxically, the chipped stone tool assemblage in most regions is more diagnostic and thus a more dependable cultural marker than the pottery. The foregoing statement may not apply to the Boundary Waters region between Minnesota and Ontario. It is not possible to assess this matter properly as the large collections from the Boundary Waters come from the mixed deposits of burial mound excavations and the multi-component veneer deposits of habitation sites where, atypical of most Late Western Shield sites, pottery far outnumbers stone tools.

The precisely modelled, carefully smoothed, coil constructed, conoidal based, grit-tempered, and toothed tool decorated vessels share many attributes with the Saugeen and Point Peninsula complexes of Late Great Lakes-St.Lawrence culture in the Lower Great Lakes region. Pottery decorating techniques included impressing various toothed-tools into the wet clay prior to firing or using a push-pull motion with both toothed and straight-edged tools. There are, however, differences between Late Western Shield culture pottery and that of its neighbours to the east. An exception to the foregoing are the eastern Late Western Shield sites closest to Late Great Lakes-St.Lawrence culture territory which are so influenced by the pottery styles of their neighbour that it is frequently difficult to distinguish between the two cultures on the grounds of pottery characteristics alone. In this region, in particular, the stone tool assemblage must be relied upon for accurate cultural assignment.

Late Western Shield culture subsistence practices usually must be inferred from site location as, in most instances, acid soils have destroyed all bone. The Heron Bay site on the northshore of Lake Superior is an exception (Wright 1967). Here abundant beaver and moose remains were recovered with lesser frequencies of caribou, muskrat, varying hare, and bear. Round whitefish, char, lake sturgeon, northern pike, longnose sucker, and walleye or sauger were identified among the fish remains. Preservation of bone at this site was due to acid neutralizing sodas (wood ash) from the many campfires. Faunal remains have also been reported from the Long Sault site in the Great Lakes-St.Lawrence Forest vegetation province of the Rainy River (Arthurs 1986). Large mammal remains were represented by moose and deer or caribou. Of interest was the presence of dog remains. Beaver dominated the small mammal category while muskrat, varying hare, porcupine, and marten are also reported. Fish were important at this site with sturgeon being most common. In the same region, other sites have produced bison remains indicating access to the Parklands a short distance to the west or possibly even bison penetration into the immediate area.

Most excavated sites represent warm weather occupations where large groups of people came together on a seasonal basis. Such sites tend to be situated along major river and lake systems and particularly at river mouths and adjacent to swift water with good fishing pools. A settlement pattern feature which only appears to apply to the southwestern portion of the Late Western Shield culture distribution is proximity to major wild rice beds. Undoubtedly innumerable small camps were scattered throughout the hinterland in order to hunt and acquire products, such as high quality stone for tool manufacture, birch bark for canoe and lodge sheathings and containers, various woods for a range of tools, berries and other plant substances for a wide range of purposes including medicine. With the exception of stone quarry sites, such small resource specific sites are extremely difficult for archaeologists to locate or identify as to purpose. Winter settlement is unknown but presumably consisted of the dispersal of small groups of families with their fall food stocks into their cold weather hunting territories.

Information on Late Western Shield culture cosmology, while locally extensive, is very uneven with respect to the culture as a whole. In the southwestern portion of their territory people participated in elaborate burial mound ceremonialism adopted via a southern intermediary, Malmo culture, from Hopewell culture even further to the south. The construction of mounds incorporating multiple secondary bundle burials and a general absence of grave offerings being placed directly with the deceased other than red ochre, reflect local values regarding appropriate burial procedures that are quite different from that of the Hopewell mortuary complex. The earth mounds themselves and certain specific traits, such as brain and longbone marrow removal, however, duplicate southern traits. Beside the burial mounds, the only other burial site which probably pertains to Late Western Shield culture is the Arrowhead Drive site on Bois Blanc Island in northern Michigan (Bettarel and Harrison 1962). Here a burial pit contained the mainly articulated remains of a number of individuals. Included among the grave offerings were a pottery vessel, a bag of implements, a modified bear mandible, and hematite cones, the last two items representing Hopewell culture traits.

Probably at least some of the enigmatic pit features constructed of cobbles that have been reported from southeastern Manitoba (Carmichael 1981) and, in particular, along the northshore of Lake Superior (Dawson 1981a) are of Late Western Shield culture authorship. These structures, generally situated in isolated locations exposed to the elements, have been interpreted as cosmological features wherein individuals could obtain a guardian spirit or prophecy by fasting, contemplation, and prayer. Some of the painted rock art of the Canadian Shield may also eventually be shown to pertain the Late Western Shield culture.

Late Western Shield culture neighbours were Late Great Lakes-St.Lawrence culture to the east, Middle Palaeo-Eskimo and Late Northwest Interior culture (Taltheilei complex) to the north, Late Plains culture to the west and southwest, and a number of Upper Great Lakes and more westerly cultures such as North Bay and Malmo. Relationships with Late Great Lakes-St.Lawrence culture (the Point Peninsula and Saugeen complexes, in particular) appear to have been quite close and naturally enough more so for the more easterly bands. It is probable that the mixed pottery decorative characteristics apparent on eastern Late Western Shield sites reflect intermarriage between Late Western Shield culture and Late Great Lakes-St.Lawrence culture peoples where women would move to the band of their husband along with their pottery traditions. Certainly at Late Western Shield sites, such as Heron Bay (Wright 1967), and Late Great Lakes-St.Lawrence sites, such as Donaldson (Wright andAnderson 1963), pottery styles characteristic of both cultures have been found in direct association with one another suggesting intermarriage between some of the bands of the respective cultures. Such kinship ties would have assisted the movement of goods like native copper between the different cultures. Similarly, to the west Late Western Shield pottery and occasional Lake Superior copper items are found on Late Plains culture sites in southwestern Manitoba (Syms 1977) while Knife River chalcedony from North Dakota and, less common, Wyoming obsidian found on Late Western Shield sites would have had to pass through the hands of Late Plains culture people. Relationships to the north are tenuous. There has been a suggestion that the limited Late Western Shield presence on the Churchill River drainage in northern Manitoba (Southern Indian Lake) was due to its occupation by the Late Northwest Interior culture (Taltheilei complex) (Dickson 1980). Near where the Saskatchewan River empties into Lake Winnipeg, the recovery of a fragment of a perforated soapstone lamp or bowl (Mayer-Oakes 1970: 25) suggests some form of contact with Middle Palaeo-Eskimo culture on the Hudson Bay coast via the Nelson River. While there does appear to have been some blending of LateWestern Shield culture pottery styles and those of Malmo culture in central Minnesota (Wilford 1955) and possibly the Summers Island culture of northern Michigan (Brose 1970), the relationships appear to be of a general rather than specific nature. The stone tool technologies of both of these southern cultures, for example, are clearly unrelated to that of Late Western Shield culture. There is even less evidence of significant interaction with the North Bay culture of the Door Peninsula of northern Wisconsin (Mason 1966). At this point in time the major external relationships of Late Western Shield culture definitely appear to be with their neighbours to the east in the Lower Great Lakes and to the west in the Parklands and Grasslands of Manitoba and North Dakota.

Despite the excavation of a number of Late Western Shield culture burial mounds in Ontario and adjacent Minnesota, there is little information on human biology. Information either is not available in published form or bone preservation was so poor and archaeological contexts so confused that physical anthropological interpretations have been seriously inhibited. The only report on Late Western Shield culture human biology pertains to 39 individuals from the Smith Mound 3 and Smith Mound 4 sites in northern Minnesota (Ossenberg 1974). Even these remains were so fragmented and poorly preserved that only four of the 26 discrete skull traits used to determine population relationships could be measured, thus seriously weakening observations pertinent to the genetic make-up of the people and their biological relationship to other people. It was possible to suggest that the Blackduck complex people of the Period V Northern Algonquian culture in southern Manitoba, north-central Minnesota and adjacent Ontario were direct descendants of the local Late Western Shield population (Ibid: 37).

For most of Late Western Shield culture there appears to be no significant change in social structure from that of their Middle Shield culture ancestors of Period III. The same flexible, nuclear family units set within a loose band affiliation that encompassed relationships with adjacent bands bonded by intermarriage, is inferred to have pertained. In the southwestern region of the Late Western Shield culture distribution and, in particular, in the Rainy River region of Ontario and Minnesota, however, there appears to have been a significant social deviation from the cultural norm. The large seasonal band gathering sites along this river and adjacent areas contain prominent burial mounds. Most of the mounds were built in a number of stages. Their construction and maintenance through time would suggest a level of social organization and allocation of authority that was undoubtedly alien to most of Late Western Shield culture society. Presumably this authority was vested in powerful shaman-priests who would have directed procedures, such as skull and longbone perforation and the timing of interment ceremonies and periodic mound construction. In addition to the Rainy River area being influenced by the Hopewell culture mortuary system, the exceptionally rich wild rice and sturgeon resources of the region appear to have permitted a population density and a degree of sedentariness impossible for economically less well endowed bands to achieve. The exceptional local situation must have led to some form of social inequality as only a fraction of people were accorded mound burial. In terms of social stratification, the most parsimonious explanation for this development is that a number of families with proprietary rights to particular parcels of land, became suddenly wealthy in terms of food when the technology for the processing and storage of wild rice was developed. This, in turn, would have permitted these particular families to use the new-found food wealth to differentiate themselves from their less fortunate neighbours and to mimic the elaborate mortuary ceremonialism of the Hopewell mortuary complex to the south. Whatever the factors that gave rise to the social inequality, the fact that some social differentiation took place is apparent in both the limited number of burial mounds and their restricted distributions. The local burial mound tradition continued into Period V. There is also some tenuous evidence that the Rainy River region might have functioned as a regional trade fare locale where a number of different cultures could interact to mutual benefit.

The limitations in the evidence available on Late Western Shield culture are the same as those affecting all occupations of the Canadian Shield; severely restricted archaeological visibility except for the large warm weather base camp sites, the general absence of bone due to acid soils, the hopeless mixture of components with earlier and later occupations, and the contamination of radiocarbon samples from humic acids, forest fires, and poorly demarcated archaeological contexts. There have been special problems that arise from the exceptional geographic extent of Late Western Shield culture and the processes involved in the spread of pottery. Pottery, being a plastic medium within which numerous culturally determined acts involving manufacturing and decorative techniques become permanently locked in the fired clay, provides archaeologists with an unusually sensitive artifact for seriation and other analytical manipulations required to construct culture history. Pottery vessels also break into many pieces and are relatively indestructible and thus are archaeologically highly visible. Unfortunately pottery can also act as a simplistic 'index fossil' whereby archaeologists are inclined to make cultural and temporal pronouncements based solely upon the pottery while essentially ignoring the rest of the comparative evidence. Such a limited approach, in conjunction with some ever present regional parochialism in archaeology, has resulted in conflicting interpretations regarding pottery relationships. Differing perceptions are apparent from eastern Ontario and Québec, from northern Michigan, Wisconsin, and

Minnesota, and from Manitoba and east-central Saskatchewan. Even attempts at broader constructs, such as the Hopewell Interaction Sphere or the concept of Middle Woodland Southern, Middle, and Northern Tiers suffer from narrowly defined regional perspectives.

Cultural origins and descendants:

Referred to in this work as Late Western Shield culture in order to accommodate the special requirements of a national cultural classification scheme, the culture under consideration is known in the archaeological literature as 'Laurel'. The term was first applied to a burial mound complex in northern Minnesota (Wilford 1955). Subsequent research in Ontario and Manitoba led to the definition of a widespread Laurel culture (MacNeish 1958; Wright 1967). Contrary to an earlier hypothesis that this culture, or more accurately, its pottery, was derived from Asia (Wright and Anderson 1963: 55), there is now evidence that the pottery diffused to the west from Late Great Lakes-St.Lawrence culture (Wright 1972a: 59) and was adopted by the prepottery descendants of Middle Shield culture. Early in Period IV the bow and arrow weapon system, which was first introduced to Middle Shield culture at the end of Period III, had replaced the earlier spearthrower although occasional lance points were still in use. The dominant role of the bow and arrow weapon system in Late Western Shield culture contrasts with the retention and even dominance of the earlier spearthrower weapon system among certain neighbouring groups such as the North Bay and Summer Island cultures of northern Lake Michigan and the Saugeen complex of Late Great Lakes-St.Lawrence culture. The earliest Late Western Shield culture calibrated radiocarbon dates suggest that the transformation of Middle Shield culture into Late Western Shield culture took place sometime between 700 and 500 BC. Others archaeologists would see this event as having taken place between 300 and 200 BC (Buchner 1979; Dawson 1980). Dating the earliest pottery is critical since, for classificatory convenience, it is the addition of pottery vessels to Middle Shield culture technology which transforms it into Late Western Shield culture. There is some evidence of an early to late cline in radiocarbon dates as one advances from east to west and, in particular, with reference to the Late Western Shield culture penetration of Manitoba and Saskatchewan. Prepottery occupations during the early part of Period IV would be largely indistinguishable from Middle Shield culture at the end of Period III. Examples of such prepottery Period IV sites are the Low Beach site on the upperAlbany River in the Hudson Bay drainage (Riddle 1981) and the Fayle site east of Lake Nipigon in Ontario (Adams 1983).

While most researchers regard Late Western Shield culture as an outgrowth of Middle Shield culture (Dawson 1983a; Mason 1981: 285; Pollock 1975: 26; Wright 1972) there are a number of different scenarios on just where the pottery came from and when. Dawson (1983a) has argued that people from the Boundary Waters region between Minnesota and Ontario with pottery moved northward to blend with the local Shield culture populations. A similar position is held by Reid and Rajnovich (1991: Figs. 24-27). Both of these proposals are based upon assumptions derived from Boundary Waters area pottery seriation (Stoltman 1973) supported by a selective use of radiocarbon dates. The adjective "selective" is appropriate as certain pertinent early eastern dates are either ignored or rejected (e.g. Brizinski and Buchanan 1977; Conway 1980; Wright and Anderson 1963). A number of very late radiocarbon dates are found to be acceptable even though they contradict the clear stratigraphic evidence of cultural succession (e.g. Reid and Rajnovich 1991: Fig.27). A radiocarbon date from the Wawa site, at the mouth of the Michipicoten River where it enters Lake Superior, which calibrates between 1,240 BC to AD 1, is not rejected per se but is simply stated not to pertain to Late Western Shield culture (Laurel) (Dawson 1981: 37) even though the limited number of pottery vessels and stone tools recovered all clearly relate to Western Shield culture (Brizinski and Buchanan 1977). More significant than the date, with its unacceptably wide statistical age spread, is the geological dating of the beach upon which the site is situated which would suggest an age of around 500 BC (Brizinski and Buchanan 1977: 294; Saarnisto 1974). As will be discussed in the **Technology** section, the aforementioned Stoltman pottery seriation relied upon samples of mixed cultural debris lacking controlled archaeological contexts and the erroneous assumption that the anchor comparative unit, the Summer Island site in northern Michigan (Brose 1970), is a Late Western Shield culture site. Further, the complex>composite>configuration>pattern classification of Leigh Syms (1977) advocated by Reid and Rajnovich (1991: 224-229) requires clearly isolated geographic/temporal components which are rarely discernable on Late Western Shield culture sites. Most of the so-called components from the "Boundary Waters Composite" are either composed of village debris scrapings of unknown time depth used as burial mound fill or are based upon undemonstrated assumptions of component purity for multi-component sites such as the Ballynacree site (e.g. Ibid: Fig.22). Thus the entire comparative process and its resulting seriation is based upon a number of seriously flawed assumptions. As has been noted elsewhere (Mason 1969), an eastern not western origin for early pottery best fits the broad picture of pottery style diffusion in eastern North America.

The transition out of a prepottery Middle Shield culture technology involved people adopting an eastern pottery complex. It is still unclear in much of southeastern Manitoba and immediately adjacent Ontario, however, whether prepottery Middle Shield culture descendants preceded the appearance of pottery or whether the pottery had already been integrated into the technology before people spread into territories recently abandoned by Late Plains culture (Pelican Lake complex). The interrelationships of Grassland/Parkland and Boreal Forest adapted cultures in southeastern Manitoba is well demonstrated at stratified sites such as the LM8 site (Buchner 1979). Here Early Shield culture of Period II, represented by the Caribou Lake complex, is succeeded by the Middle Plains culture Oxbow complex of Period III which is followed by Middle Shield culture which, in turn, is replaced by the Late Plains culture Pelican Lake complex that is followed by Late Western Shield culture (Laurel) during Period IV. These alternating cultural replacements in southeastern Manitoba and adjacent Ontario should not to be viewed as evidence of a shifting cultural battle field but rather as the product of changing environmental circumstances that favoured one adaptation, Parklands versus Boreal Forest, over another (Buchner 1979; 1982; Steinbring 1980). It is a fact, however, that the settlement pattern distributions and presumably subsistence strategies of both the Plains or Forest adaptations in the area were identical. For Plains culture people proximity to both the Parkland bison herds and forest resources, such as fish, were likely the major determinants influencing their occupation of the margins of the Canadian Shield.

There is agreement that historically documented Algonquian-speaking peoples, namely the Ojibwa, Western Cree, and Algonkin, represent the descendants of Late Western Shield culture although there are a number of scenarios on just how this is believed to have taken place. An archaeological debate exists whether Late Western Shield culture developed into the various later regional complexes of Period V or whether it was contemporary with said complexes and was eventually absorbed by them. The chronologically ancestral role of Late Western Shield culture is strongly supported by both stratigraphic and elevated strandline evidence (Wright 1967). There is also the evidence of a gradual transition of technology in the form of pottery and projectile point attributes and other chipped stone tools from Late Western Shield to the Northern Algonquian culture of Period V. Sites such as Potato Island (Koezur and Wright 1976) exhibit both pottery and stone tool attribute changes trending towards later styles. Other researchers, relying more upon radiocarbon dates, have suggested a 300 year long cultural coexistence of Late Western Shield culture (Laurel) with what are regarded here as its descendants (Northern Algonquian culture) and the eventual cultural absorption of the former (Dawson 1981: 38; Syms 1977: 106).

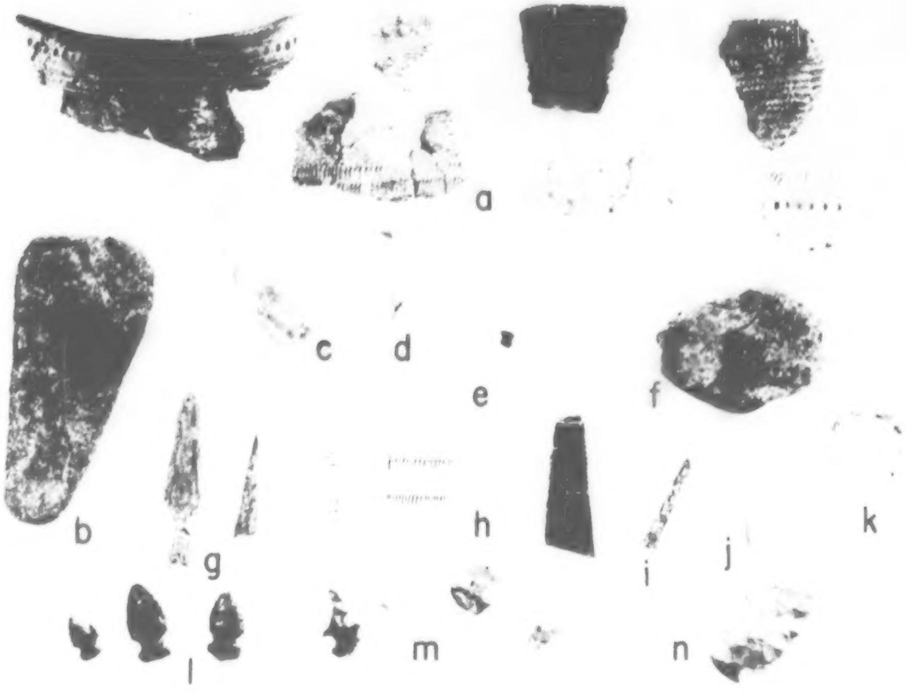
A number of pertinent radiocarbon dates can be found in the following reports: Ontario (habitation) - Brizinski and Buchanan 1977, Conway 1980, Dawson 1981, Reid and Rajnovich 1991, Wilmeth 1978, (mortuary) - Kenyon 1971, Wilmeth 1978; Manitoba (habitation) - Dixon 1976, Long and Tamplin 1977; Minnesota (habitation) - Lass 1980, Rajnovich et. al. 1982, (mortuary) - Stoltman 1974; and Michigan (mortuary) - Janzen 1968.

Despite differing views regarding the details bearing on the origins and subsequent ancestral role of Late Western Shield culture the evidence of technological, settlement pattern, subsistence, cosmological and, to a lesser extent, human biological continuity, have contributed to a substantial degree of agreement. There is a consensus that Late Western Shield culture is simply Middle Shield culture with the addition of pottery and some other regionally restricted diffused traits such as burial mounds and that the culture was ancestral to historically documented northern Algonquian-speaking peoples including the Western Cree, Ojibwa, and, in part, Algonkin.

Technology:

Late Western Shield culture pottery (Laurel) represents the earliest evidence of pottery vessel manufacture in northwestern Québec, Northern Ontario, Manitoba, and east-central Saskatchewan as well as northernmost Michigan and Minnesota. As pottery attributes, such as decorative techniques, motifs, vessel form, and manufacturing procedures, change through time and space it is an exceptionally useful element of technology for tracing cultural change and relationships. Unfortunately, pottery's very strengths as a culture time and space marker all too often result in it being used as a simplistic 'index fossil' removed from the rest of the technology and other associated culture systems. Pottery then becomes independent of any total regional technology, much less a whole culture, and is frequently used to relate a number of cultures to one another. Such an approach falsely homogenizes cultures by emphasizing the shared pottery attributes rather than making balanced comparisons of the similarities and dissimilarities of the total technologies, settlement patterns, subsistence, cosmology, and human biology. Late Western Shield chronology and regional variability has suffered excessively from the over-emphasis placed on pottery characteristics to the nearly total exclusion of other considerations. The culture, for example, has been frequently lumped with other cultures or complexes such as North Bay, Saugeen, and Point Peninsula to form larger classificatory units like Northern Tier Middle Woodland (Mason 1967) or Lake Forest Middle Woodland (Fitting 1978). The latter construct even assumes a common adaptive strategy ignoring the geographic extent of Late Western Shield culture and its exploitation of the variable resources of a number of different vegetation provinces. Cultural similarities attributed to the component parts of the Northern Tier Middle Woodland (Mason 1967: 342), for example, are essentially based upon some very general pottery styles and exclude markedly different aspects of technology such as the chipped stone tool industry.

Much of the confusion involved in a number of culture history reconstructions premised on pottery styles relates to the fact that credence is not given to the evidence



BLACK AND WHITE PLATE XXXI: LATE WESTERN SHIELD CULTURE ARTIFACTS The artifacts come mainly from the Heron Bay site on the northshore of Lake Superior and are as follows: 'a' - typical rim sherd fragments from six pottery vessels; 'b' - hammerstone; 'c' - bifacially flaked knife; 'd' - beaver incisor knife; 'e' - antler toggling harpoon; 'f' - stone netsinker; 'g' - copper arrowheads; 'h' - a stone pottery decorator to the right and its impressions in plasticine to the left; 'i' - a copper chisel; 'j' - a copper needle; 'k' - copper beads; 'l' - typical chipped stone arrowheads; 'm' - a range of scraper varieties; and 'n' - a lance head and/or knife. (Reproduced from Wright 1972a. Scale: the lance head in the lower right corner (n) is 8.3 cm in length)

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that there were two major and different pottery traditions in eastern North America; a cord impressed pottery tradition mainly to the south of the Great Lakes and a dentate stamped pottery tradition in and north of the Great Lakes region. To further confound matters, a certain amount of sharing of these two grand pottery traditions took place, for example, on North Bay and Point Peninsula sites. The two different pottery traditions of eastern North America were unrelated except in the sense that the dentate tool decorated pottery can be most reasonably regarded as the stimulus diffusion product of the slightly earlier cord-impressed pottery tradition. Both pottery traditions extend in parallel southern and northern bands from the Atlantic Ocean in the Maritimes and New England westward to Saskatchewan and North Dakota. The existence and interrelationships of these two distinct pottery traditions were discussed in greater detail in Chapters 22 and 23.

Local prepottery peoples adopted pottery from one or the other or both of the two different pottery traditions and therefore the nature of the pottery mix does not provide a basis for the establishment of a cultural construct when other lines of evidence indicate that the entities are really quite distinct from one another. The Late Western Shield culture stone tool industry, for example, is both qualitatively and quantitatively distinct from that of its Late Great Lakes-St.Lawrence, North Bay, or Late Plains culture neighbours. Thus, I disagree with the observation that "...the Laurel culture is part of a group of closely related, upper Great Lakes cultures of Middle Woodland age that interact with but remain largely independent of the Hopewellian interaction sphere to the south" (Stoltman 1973: 112). In addition to being culturally quite distinct from its neighbours, Late Western Shield culture interaction with Hopewell culture to the south was largely restricted to the Boundary Waters region of adjacent Minnesota and Ontario. Again contrary to Stoltman (Ibid: 113), the distinctive technology of the Summer Island site in northern Michigan (Brose 1970) cannot be assigned to Late Western Shield culture despite its early radiocarbon dates. Not only are the majority of the Summer Island site pottery attributes distinct from those of Late Western Shield culture pottery but the chipped stone tool assemblage is strikingly different, exhibiting a close relationship with that of the North Bay culture immediately to the south. In this section on **Technology** it has been judged necessary to consider in some detail the role that pottery has played in the construction of Late Western Shield culture history. Various manipulations of the pottery evidence, along with a cavalier use of the radiocarbon evidence and the treatment of mixed cultural deposits as if they were single components, have resulted in considerable controversy. Application of mathematical and analytical techniques to mixed cultural debris drawn from burial mound fill and the thin cultural deposits from multi-component base camps will do nothing to rectify the inherent limitations in the samples. The samples are composed of an unknown number of different occupations and to treat them as single components for comparative purposes is to promulgate archaeological myths.

It has been difficult to find Late Western Shield culture site samples that are sufficiently large or uncontaminated by intermixture with earlier and later occupations or which have been described in a manner permitting comparison of total assemblages.

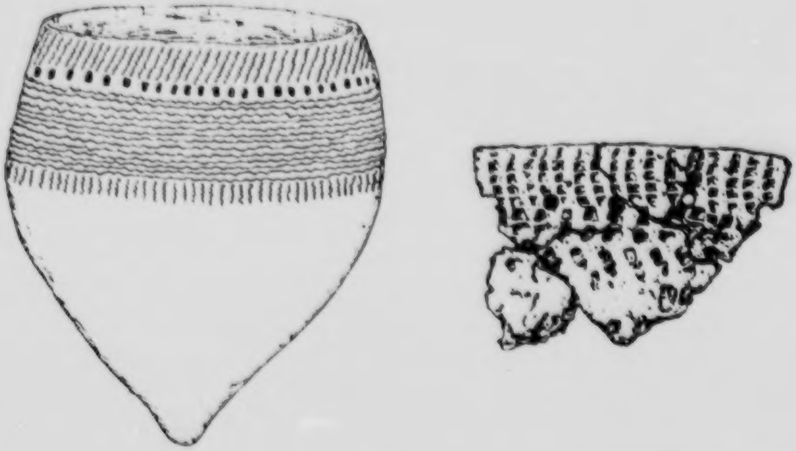

FIGURE 72: AN EARLY POTTERY VESSEL AND A LATE RIM SHERD FRAGMENT
The vessel is a typical early form of Late Western Shield culture pottery decorated with a distinctive type of dentate stamp called pseudo scallop shell and an encircling row of external punctates, all applied to a carefully smoothed body, while the late style rim sherd to the right possesses a number of pottery attributes that continue into Period V in Northern Algonquian culture (Blackduck complex). (Drawings by Mr.David W. Laverie. Scale variable)

As the use of pottery characteristics has been largely responsible for portraying a close relationship between Late Western Shield culture and its southern and eastern neighbours, Table 13 excludes the pottery and concentrates on the rest of the tool kit and, in particular, the stone tool industry. In many respects, the stone tool kit of Late Western Shield culture provides a better comparative unit than pottery given the sharing of certain pottery traits by neighbouring cultures and the scarcity of pottery on many Late Western Shield culture sites, particularly in the east. The foregoing observation does not apply to the Boundary Waters area of the Rainy River where pottery is dominant and the stone industry is comparatively weak. Five of the sites compared are Late Western Shield culture sites (Heron Bay, MacGillivray, Fayle, Killala Lake, and Pa-ke-gama) and the late Middle Shield culture lower stratum of the Frank Bay site is included for comparative purposes. The Fayle site is probably an early prepottery Period IV site. Sites were selected on the basis of being the best approximations available of limited occupations lacking mixture with earlier and later occupations and having adequately described samples. All of the sites are in Ontario and range from west of Thunder Bay to near the Ontario and Québec border. References for the sites are as follows: Frank Bay (Ridley 1954); Fayle (Adams 1983); Heron Bay and Killala Lake (Wright 1967); MacGillivray (Dawson 1980); and Pa-ke-gama (Pollock 1994). As comparative units, the preceding sites are not all that one could have wished. The Heron Bay site is probably one of the best sites. Situated on the northshore of Lake Superior near the mouth of the Pic River, the site has been isolated from significant earlier and later cultural contamination by isostatic rebound. While an unknown amount of time depth is undoubtedly represented at this large seasonal base camp, the relatively homogeneous nature of the total assemblage would suggest that it is limited. Further, bone preservation, although erratic, does permit a rare glimpse of the bone tool industry. There was a certain amount of cultural mixing at the stratified Frank Bay site and influences from nearby Late Great Lakes-St.Lawrence culture are also apparent. A significant percentage of the Fayle site collection was the product of surface collecting and random digging although the site location and the nature of the assemblage suggests a limited seasonal occupation. The site is located to the east of Lake Nipigon in Ontario. While there is evidence of later occupations, the MacGillivray site assemblage appears to be a product of a limited period of time. Associated with a burial mound on an island in Whitefish Lake, the site is adjacent to wild rice beds. Dawson (1980:45) regarded the burial mound as being earlier than the habitation site but there is no particular evidence to support this contention. The site does have closer affinities with sites in the Boundary Waters area than the northshore of Lake Superior. The Killala Lake site, situated on an interior lake to the north of Lake Superior, was a special purpose site where Hudson Bay Lowlands chert nodules were gathered and subjected to some cortex trimming prior to being rendered into tools away from the site. There was no evidence of other cultures at the site. Pa-ke-gama also appears to have been a special purpose site where preform production was important. Unfortunately there is only a cursory description of the site which appears to have been occupied for a limited period. The site is located in eastern Northern Ontario near the Québec border. Other potential comparative units (Reid and Rajnovich 1991) have been excluded due to either limited descriptions of the stone tool assemblages or the extent of component mixture. Similar problems pertain to sites in southeastern Manitoba (Buchner 1979).

The most striking single feature of Table 13 is the exceptionally high frequencies of scrapers. At the Period III/IV transition Frank Bay site late Middle Shield culture occupation 66% of the total assemblage consisted of scrapers. From the remaining sites scraper frequencies ranged from 40% to 62% with an average of 51%. Such frequencies are much higher than those from contemporary Late Great Lakes-St.Lawrence culture sites like Constance Bay (Point Peninsula complex) with 27% and Thede (Saugeen complex) with 21% but the same as the Batiscan site (Meadowood complex) at 58%. Meadowood scraper frequencies appear to vary geographically, however, with 60% at

Category	**Frank Bay**		**Fayle**		**Heron Bay**		**MacGillivray**		**Killala**		**Pa-ke-gama**	
	f	%	f	%	f	%	f	%	f	%	f	%
Projectile points	13	16.3	16	40.0	46	4.8	9	10.1	3	5.1	12	21.4
End scraper	40	50.0	11	27.5	217	22.5	15	16.9	18	30.5	?	?
Side scraper	12	15.0	5	12.5	218	22.6	18	20.2	5	8.5	24?	42.9?
Random scraper	1	1.3	-	-	163	16.9	17	19.1	8	13.6	?	?
Knives	7	8.8	5	12.5	19	2.0	9	10.1	7	11.9	?	?
Linear flake	3	3.8	-	-	58	6.0	1	1.1	7	11.9	-	-
Preforms	1	1.3	?	?	-	-	3	3.4	-	-	16	28.6
Ground slate	1	1.3	-	-	3	0.3	1	1.1	-	-	-	-
Spokeshave	1	1.3	-	-	-	-	-	-	-	-	-	-
Graver	1	1.3	-	-	-	-	-	-	-	-	-	-
Flake knife	-	-	1	2.5	-	-	2	2.2	-	-	-	-
Drill	-	-	1	2.5	-	-	1	1.1	-	-	-	-
Uniface knife	-	-	1	2.5	-	-	-	-	-	-	2	3.6
Lancehead	-	-	-	-	2	0.2	2	2.2	-	-	-	-
Hammerstone	-	-	-	-	21	2.2	3	3.4	4	6.8	-	-
Netsinkers	-	-	-	-	20	2.1	-	-	-	-	-	-
Spall tools	-	-	-	-	5	0.5	-	-	2	3.4	-	-
Red ochre	-	-	-	-	P	P	-	-	P	P	P	P
Graphite	-	-	-	-	1	0.1	-	-	-	-	-	-
Abraders	-	-	-	-	21	2.2	3	3.4	-	-	-	-
Mano	-	-	-	-	1	0.1	-	-	-	-	-	-
Chisel	-	-	-	-	1	0.1	-	-	-	-	-	-
Steatite	-	-	-	-	1	0.1	-	-	-	-	-	-
Copper tools	-	-	-	-	119	12.3	5	5.6	4	6.8	-	-
Bone tools	*	*	*	*	46	4.8	*	*	1	1.7	*	*
Shell beads	-	-	-	-	2	0.2	-	-	-	-	-	-
Wedges	-	-	-	-	-	-	-	-	-	-	2	3.6
Totals	**80**	**100.4**	**40**	**100.0**	**964**	**100.0**	**89**	**99.9**	**59**	**100.2**	**32**	**57.2**

TABLE 13: COMPARISON OF THE NON-POTTERY TECHNOLOGY OF A PERIOD III MIDDLE SHIELD CULTURE SITE AND FIVE LATE WESTERN SHIELD CULTURE PERIOD IV SITES Note: red ochre nodules were not presented by frequency to avoid distortion; * = no bone preservation; scraper form was not provided for the Pa-ke-gama site; and though pottery was excluded from the Table the following pottery vessel frequencies pertain: Heron Bay - 123; MacGillivray - 58; Killala Lake - 3; Fayle and Pa-ke-gama - a minimum of 1 each.

the Pointe-du-Buisson site but only 5% and 17% from the western New York Scaccia and Riverhaven sites, respectively (see Tables 9 and 10). High scraper frequencies are typical of both Middle Shield culture and Late Western Shield culture sites (Wright 1972: Tables 18 and 19). At the Michipicoten Harbour site, near the eastern end of the northshore of Lake Superior, a study of end scraper bit end angles revealed a range between 50° and 85° (Brizinski and Buchanan 1979: Table 49). Such angles are regarded as being suitable for heavy duty cutting and scraping functions (Wilmsen 1974: 91).

Projectile point styles from the Middle Shield culture occupation of the Frank Bay site are side-notched, lanceolate, triangular, and stemmed with haft thicknesses suggesting that most of the points were arrowheads rather than dartheads (personal examination: see Figure 73). In the subsequent Late Western Shield culture occupation of this site, which could not be included in the preceding Table because of incomplete quantification of tool categories, what sound like typical Late Western Shield culture side-notched points were recovered along with 'numerous' end scrapers (Ridley 1954: 43-44). Points from the Heron Bay site are side-notched arrowheads and closely resemble those from the Fayle site except that points from the latter site represent a mixture of arrowheads and dartheads suggesting a transitional position from Middle Shield to Late Western Shield culture. Point styles at the Pa-ke-gama site have not been described while the limited number of points from the MacGillivray site consisted of small side-notched and stemmed forms. Although sample size is undoubtedly a factor, there does appear to be some increase in the numbers of tool varieties from Period III to Period IV. While the sample of tools from the Killala Lake site is small, the high frequencies of biface blades (point preforms?) and hammerstones when compared with the Heron Bay site 42 km to the south reflect the availability of Hudson Bay Lowland chert nodules at the former site. The workshop factor at the Killala Lake site becomes apparent when the chipping detritus categories and the finished chipped stone tools are compared with the same categories from the Heron Bay site (Table 14).

Category	Heron Bay		Killala Lake	
	Wt.gms	%	Wt.gms	%
Nodular chert flakes	5035	72.2	1532	37.0
Nodular chert cores	310	4.5	2484	60.0
Quartz flakes	132	1.9	5	0.1
Quartzite flakes	54	0.8	-	-
Rossport flakes	25	0.4	-	-
Taconite flakes	4	0.1	P	P
Obsidian flake	P	P	-	-
Linear flakes	36	0.5	4	0.1
Chipped stone tools	1225	17.6	120	2.9
Blanks and rejectage	154	2.2	-	-
Totals	**6975**	**100.2**	**4145**	**100.1**

TABLE 14: COMPARISON OF CHIPPING DETRITUS AND STONE TOOL FREQUENCIES Frequencies of chipping detritus relative to finished stone tools are compared using a base camp site (Heron Bay) and a nodular chert exploitation special purpose site (Killala Lake). Rossport refers to a chert deposit less that 100 km to the west on the northshore of Lake Superior and Taconite to the Gunflint Formation outcroppings near Thunder Bay. The obsidian has been identified as coming from Wyoming. P = present.

The above Table suggests that in the northshore of Lake Superior region, at least, tool kit refurbishment was not carried out at quarry sites but rather preliminary and very rudimentary core preparation was the major activity. Portable cores could then be transported to other sites, including base camps, where they were transformed into a variety of tools as required. This can be seen in the significantly higher percentages of nodular chert flakes and chipped stone tools at the Heron Bay site and a correspondingly large percentage of nodular chert cores from the Killala Lake site. Frequent pot-lidding of both nodular cores and flakes indicate that the nodules were baked in ovens in order to improve the flaking qualities of the chert by modifying its crystal structure. It would be of interest to compare the evidence from the Killala Lake site with that of the Pa-ke-gama site in eastern Ontario when the descriptive data from the latter site become available; particularly as preform production appears to have been the major activity at this site rather than simply core production (Pollock 1994). Beyond differences in site function, the assemblages from Killala Lake and Heron Bay exhibit close parallels. Allowing for the much larger sample from the Heron Bay site, the frequency of native copper tools and native copper tool production wastage in the form of fragments and flattened nuggets (Wright 1967: 35) suggests that this manufacturing procedure, not unlike that involving the production of finished chipped stone tools, was largely carried out at the base camp using raw materials extracted earlier from resource exploitation camps or acquired through trade. It has been speculated that the shift from massive silicious materials like quartzites and rhyolites to small nodular, high quality cherts that took place late in Period III was associated with the advent of the bow and arrow weapon system.

Comparing the Heron Bay and the MacGillivary sites encounters dating problems. Of the wide range of dates from the Heron Bay site, most of which extend into Period V, the earliest reading of AD 200, obtained from carbonized food scraped from the interior of vessels, still appears to be too late. The pre-mound date of 250 BC and the burial mound crib date of AD 1 from the MacGillivary site are both at odds with the majority of the pottery traits which appear to be late. While acknowledging that the samples from both of these sites represent an unknown time span of Late Western Shield culture seasonal occupation and that the time factor cannot be completely controlled, the two sites are treated as being approximations of a relatively early Late Western Shield culture site on the northshore of Lake Superior and a later site in the region west of Thunder Bay. As the sites are separated by nearly 300 km on an east-west axis with one being in the Boreal Forest and the other in the Great Lakes-St.Lawrence Forest, it can be suspected that some differences in the respective technologies will be due to both regionalism and time. One of the most striking differences is the occurrence of nearly four times as many pottery vessels at the western site (40.0% of the total assemblage compared to 11.3%). This high frequency of pottery vessels relative to the rest of the tool kit appears to be characteristic of Late Western Shield culture sites in the Boundary Waters region as well as southeastern Manitoba. As the MacGillivary site is situated adjacent to extensive wild rice beds and as Late Western Shield culture people in the Boundary Waters region exploited wild rice (Peters et. al. 1983) it is possible that pottery vessels were more important in the west where, in addition to their normal cooking functions, they would have been useful in parching the wild rice grains. Whatever the reasons, pottery vessels were far more important in the west than in the east where, in contrast, the stone tool assemblage was more developed. The Fayle site, with its mixture of arrowheads and dartheads and a single pottery vessel fragment, is a reasonable candidate for a very early Late Western Shield culture occupation. Although the collection was largely acquired by a local resident, its nature suggests that everything was picked-up and, therefore, that it is probably representative of the site assemblage (Adams 1983: 23).

There appears to be three geographically distinct expressions of Late Western Shield technology; one in the east, one in the west, and another in a central region. In the eastern region, with an approximate boundary east of the juncture of the three Upper Great Lakes to the French River-Lake Nipissing-Mattawa River north to Lake Timagami and up the Ottawa River to Lake Abitibi, a stone tool assemblage similar to the central region prevailed but the pottery exhibits strong influences from Late Great Lakes-St. Lawrence culture (Point Peninsula complex). Examples of this blending of Late Great Lakes-St.Lawrence and Late Western Shield culture pottery characteristics are noted at the Frank Bay site on Lake Nipissing (Ridley 1954), at the Hynes site on the Ottawa River (Price and Kennedy 1961: 16), and at sites on Kempt Lake on the headwaters of the St. Maurice River (Burger 1953). Interaction with Late Great Lakes-St.Lawrence culture was also responsible for the occasional ground stone celt, polished slate gorget, birdstones, and some of the projectile point styles (see Pollock 1976: 185). The assemblage at the Heron Bay site exemplifies the central regional expression of Late Western Shield culture technology with distinctive pottery characteristics reflecting little direct influence from the Lower Great Lakes and a chipped stone technology dominated by side-notched arrowheads and, in particular, a wide range of scraper varieties. The high frequencies of native copper tools and red ochre nodules is also characteristic of the central region. Included within the central region is the area extending south into northern Michigan, north to the Hudson Bay drainage of Northern Ontario, and into northern Manitoba. The western region, situated in the relatively resource rich areas of southwestern Northern Ontario and southeastern Manitoba, is characterized by an abundance of pottery vessels and a relatively weak chipped stone tool kit. A greater reliance upon plant foods, particularly wild rice as opposed to big game hunting, may be responsible for the distinctive character of the tool kit in the western region.

Regarding the details of Late Western Shield culture technology, it is reasonable to examine pottery first as it has attracted the greatest amount of attention. It is reiterated, contrary to the observation that pottery "...is the basic defining criterion for Laurel" (Janzen 1968: 102), that the stone tool assemblage is more diagnostic of the culture and can be readily distinguished from the stone tool assemblages of neighbouring cultures. Late Western Shield pottery is inferred to be a product of diffusion from Late Great Lakes-St.Lawrence culture. Indeed, eastern region Late Western Shield pottery is an amalgam of pottery traits characteristic of both cultures. In the central and the western regions, however, pottery attributes are quite distinctive. It appears that with the partial exception of the eastern region, the Late Western Shield culture potter transformed the original concepts of pottery manufacture and ornament into distinctive regional forms. A number of the earlier Late Great Lakes-St.Lawrence culture pottery traits were retained, such as rolling the moist clay into coils which were superimposed over one another and then flattened-out to form the vessel (coil construction), the notching of coils to produce mortice and tenon joints, the conoidal form of vessels, and the use of certain notched tools in a number of fashions to produce decorations dominated by horizontal bands and obliques above horizontals. These early pottery attributes were associated with a distinctive Late Western Shield culture style that involved such procedures as only decorating the upper portion of the vessel, carefully smoothing the interior of the vessel rather than using a toothed pottery decorator to produce the channelled interiors of vessels so typical of Point Peninsula pottery to the east, the frequent use of a horizontal line of punctates to demarcate exterior motif elements such as obliques and horizontals and, later in time, to produce exterior or interior bosses, and certain minor traits including decorating the exterior rim and/or lip with red ochre paint or, conversely, staining the pots in the process of making paint. Pottery manufacture wastage and pottery vessels produced by juveniles learning the art of handling the plastic medium occur on all major sites such as Heron Bay and Long Sault (Arthurs 1986: 118).

Considerable effort has been directed to studying Late Western Shield culture pottery in order to trace trends through time and space (Dawson 1980; Reid and Rajnovich 1991; Stoltman 1973; Wright 1967). Unfortunately all of these efforts and their resulting seriations suffer to varying degrees from an inability to isolate Late Western Shield culture single components and still have adequate samples for comparative purposes. The problem has been further compounded by over-extending the cultural assignment to include a site such as the Summer Island site in northern Michigan and treating it as the beginning point of the pottery seriation. Summer Island site (Brose 1970) is not a Late Western Shield (Laurel) culture site and, therefore, the seriations of pottery attributes that include it are only relevant to inter-cultural pottery comparisons and not the intra-cultural focus that was the original intention. The foregoing stands as an example of the hazards involved when only one element of technology (pottery) is emphasized over all other aspects of the technology and the other associated cultural systems. Although seriously hampered by an inability to absolutely control the time factor in Late Western Shield culture site samples, a degree of relative control has permitted some temporal trends to be detected. Based upon the premise that Late Great Lakes-St.Lawrence culture pottery was ancestral to Late Western Shield culture pottery and that early Late Great Lakes-St.Lawrence pottery attributes will also be early Late Western Shield culture pottery attributes, it is possible to suggest that certain decorative techniques, such the pseudo scallop shell form of dentate stamping, were early whereas simple dentate stamping and cording in any form were late as was the application of a line of bosses to vessels. Beyond such gross generalizations Late Western Shield pottery vessel seriations cannot, at this time, be used to establish regional pottery attribute clusters as the time factor is not controlled, despite claims to the contrary (Reid and Rajnovich 1991; Smith 1981). For example, the proposal that there is an east to west decrease in the frequencies of the pseudo scallop shell decorative technique (Rajnovich et al. 1982: 101) could simply reflect either a temporal cline related to the adoption of pottery from the east or possibly that the earliest pottery was less well represented on Boundary Waters sites relative to later pottery decorative styles and thus is under represented in the mixed deposits. There is also the issue of when wild rice harvesting was developed as it appears to have been an important consideration in the establishment of the large Boundary Waters sites. Only the effective isolation of components can resolve such issues but, in the meantime, all options should be kept open While one can sympathize with archaeologists attempting to extract maximum information from pottery as one of the most qualifiable artifact categories of Late Western Shield technology, the creation of undemonstrated single components for comparative purposes is an unacceptable procedure. To continue to treat such units as components with limited time depth will only promulgate analytically derived myths, based as they are upon samples that are neither components nor, often, even rough approximations of such. This is not to say that the pottery recovered from mixed sites does not have a role to play in the understanding of Late Western Shield culture but simply that it cannot, at this time, be used to establish specific regional, temporal, and spatial constructs given the lack of control over the time factor. It is likely necessary that the large base camp and burial mound collections be avoided and that smaller samples from relatively discrete camps be sought in order to establish regional clusters despite problems inherent with small samples. A promising area of research would be to concentrate archaeological survey along the northshore of Lake Superior in search of large base camps that have been isolated form earlier and later occupations by the process of isostatic rebound. However, there does not appear to be any easy solution to this problem which plagues all aspects of Subarctic archaeology. As noted, the sites used in Table 13 all suffer from the aforementioned problem but hopefully its impact has been reduced by a careful consideration of a range of factors such as the component isolating influence of isostatic

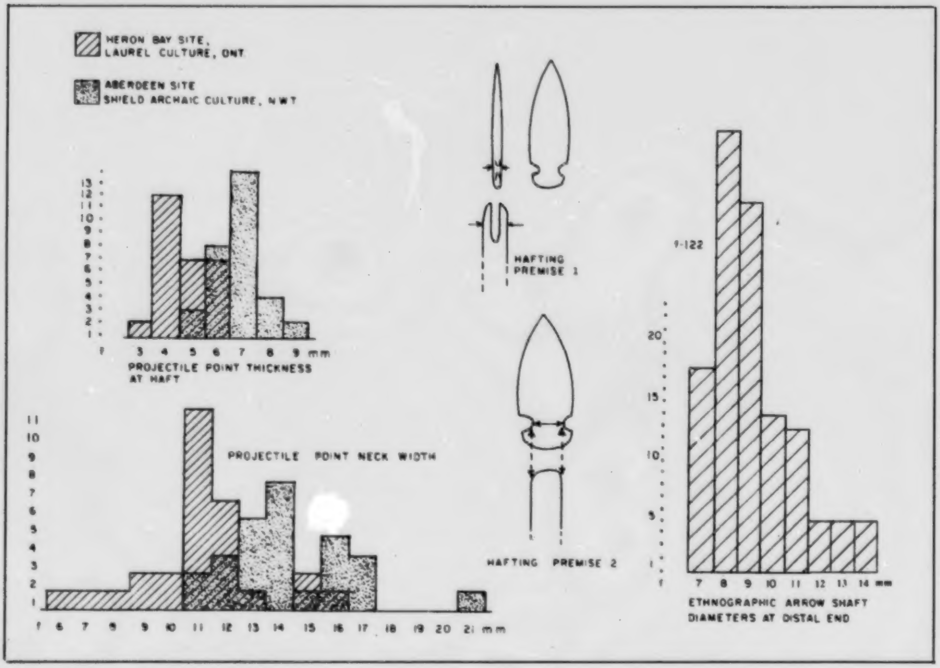

FIGURE 73: CRITERIA USED IN DISTINGUISHING BETWEEN DARTHEADS AND ARROWHEADS Differentiation of stone arrowheads (bow and arrow weapon system) and stone dart and spearheads (spearthrower and lance weapon systems) is based upon projectile point thickness at the haft (premise 1) and haft notch width (premise 2) relative to the receiving capacity of measured ethnographic wooden arrow shaft distal diameters. In the histograms to the left, the dartheads are from the Middle Shield culture Aberdeen site in Keewatin District, NWT (Wright 1972b) while the arrowheads are from the Late Western Shield culture Heron Bay site on the northshore of Lake Superior (Wright 1967). (Drawing by Mr. David W. Laverie; Note: this drawing was published as Figure 4 in Wright 1994 but somehow the upper range of the distal arrowshaft diameters of 4 specimens each for the 12, 13, and 14 mm diameters were left off the histogram. The omission has been corrected in this Figure)

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rebound, the absence or scarcity of earlier and later cultural debris, and the degree of assemblage homogeneity.

Late Western Shield culture stone technology is characterized by side-notched projectile points similar in form to Period III Middle Shield culture dartheads. Corner-notched and stemmed projectile points are occasionally present. A dominance of scraper forms, rare biface knives or point preforms exclusive of quarry situations, an absence or scarcity of stone tools fashioned by grinding, linear flakes, notched netsinkers, linear hammerstones, an absence or scarcity of wedges, and a wide variety of minor chipped stone tool categories are characteristic positive and negative traits, particularly with reference to the eastern and central regions. The predominantly side-notched points are regarded as arrowheads propelled by a bow rather than dartheads propelled by a spearthrower or by hand (lance) (see Figure 73). It is speculated that the bow and arrow weapons system was introduced from the east late in Period III (see discussion in Chapter 23). A characteristic of the Late Western Shield culture chipped stone industry is its microlithic appearance, undoubtedly a product of a tool production system based mainly upon relatively small nodular chert cores. A heavy reliance upon Hudson Bay Lowlands nodular cherts is particularly characteristic of the central region and, to a lesser extent, the eastern region of the Late Western Shield culture distribution. Even in the western region it is a preferred material (Reid 1981) although considerable use is also made of the locally available massive rhyolite and taconite deposits resulting in larger implements and a high frequency of biface knives. A similar situation is particularly apparent in southeastern Manitoba (Buchner 1979). Some of the larger stone tools, however, could be the result of cultural mixture with earlier occupations. In this regard, a number of the corner-notched projectile points from the Boundary Waters region, which are regarded as being more typical of Late Western Shield culture in the area than side-notched forms (Rajnovich et al. 1982), are probable Middle Plains culture specimens totally unrelated to Late Western Shield culture. Similarly, at the Ballynacree site (Reid and Rajnovich 1991) in the Lake of the Woods area, all of the stone tools found in the Late Western Shield culture houses are assumed to pertain to the house occupations. As result both pre- and post-Late Western Shield culture point styles are attributed to the Late Western Shield culture occupation. The proven utility of projectile point types as cultural and temporal indicators was rejected in favour of undemonstrated propositions of function and whim to explain the presence of such point forms. It is clearly an effort to force the component purity of the site but in terms of projectile point typology runs contrary to the evidence from stratified Late Western Shield culture sites such as Lockport (MacNeish 1958) and the Pas Reserve (Tamplin n.d.). It is apparent that stone tools are both more abundant and represented by more tool varieties in the central and eastern regions than is the case in the western region. This situation may simply reflect the greater importance of hunting in Boreal Forest sites, such as Heron Bay, in contrast to fishing and ricing at sites such as Ballynacree (Reid and Rajnovich 1991). A common but frequently unquantified, if not totally ignored, stone artifact found on all Late Western Shield culture sites is fire fractured stone. These fragmented igneous rocks, broken in the process of baking in hearths and likely water boiling in vessels, generally represent the first obvious evidence of a archaeological site.

Information on Late Western Shield culture bone and shell technology is largely limited to the Heron Bay site where the wood ash from numerous camp fires partially neutralized the normally acid soils. Bone tools recovered in order of frequency were as follows: beaver incisor knives of a number of forms; awls; and minor numbers of conical toggling harpoon heads, snowshoe netting needles, pendants, beads, and a number of minor items. Two shell beads were also preserved and, while not identifiable to species, six other shell fragments from the site "...undoubtedly came from a limestone area, probably southern Manitoba or south of the Great Lakes" (Wright 1967: 41). A bone flesher was identified at the Tailrace Bay site at the northwestern end of Lake Winnipeg (Mayer-Oakes 1970: 1040), obliquely ground beaver incisor knives from southeastern Manitoba (MacNeish 1958), and an antler flaker from the Long Sault site on the Rainy River (Arthurs 1986). While bone tools are stated to be common at the Pas Reserve site, with harpoons being particularly abundant, there is no description available (Tamplin n.d.). Regarding the bone and shell objects recovered from four burial mounds in northern Minnesota (Webster 1973), it is uncertain how many of the items pertain to Late Western Shield culture (Laurel) as opposed to later Period V Northern Algonquian culture (Blackduck complex) use of the burial mounds. Undoubtedly the poor bone preservation throughout much of Late Western Shield culture territory and the difficulty of isolating materials to component in burial mounds and in most large habitation sites is responsible for the limited information on this aspect of technology. The Heron Bay site situation, however, would suggest that a relatively well developed bone technology was part of the Late Western Shield culture tool kit. Native copper tools, while frequently present in limited numbers on Late Western Shield culture sites, were particularly abundant at the Heron Bay site. Here the 7,000 year old copper working tradition going back to Period II was maintained. The following items are listed in order of frequency of occurrence: beads; bars (preforms and/or ornaments); awls; fishhook barbs; bangles; and minor items consisting of chisels, scrapers, an arrowhead, and a pendant (Wright 1967: 35-38).

Subsistence:

Late Western Shield culture subsistence practices, with the exception of areas with wild rice, were similar to those of Middle Shield culture of Period III relative to the resources of the various vegetation provinces occupied. Adaptability was essential to survive on the variable and seasonally fluctuating resources of the Lichen Woodland, the Boreal Forest, the Great Lakes-St.Lawrence, and the Parkland vegetation provinces (McAndrews et al. 1987). Associated with the major plant communities were their ecotonal boundaries and climatically induced micro eco-niches such as occur, for example, in the Boreal Forest (Larsen 1980). The proposal of a 'Lake Forest Middle

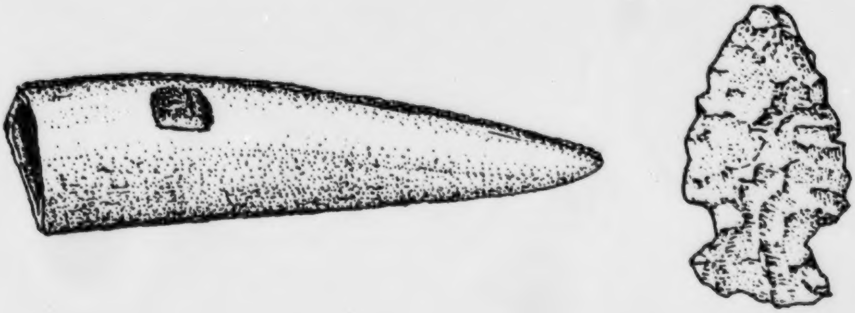


FIGURE 74: TYPICAL ANTLER TOGGLING HARPOON AND SIDE-NOTCHED ARROWHEAD The harpoon was likely used in the capture of large fish like sturgeon which can reach weights of over 90 kg (Scott and Crossman 1973: 86). Upon striking the fish the harpoon head with its retrieving line would detach from the spear shaft and the fish would then be handlined to shore. (Drawings by Mr. David W. Laverie. Scale approximately 10% larger than actual size.)

Woodland' (Fitting 1970), composed of Late Western Shield culture (Laurel), North Bay, Point Peninsula, and Saugeen, sharing an single exploitative pattern within the same environmental zone ignores the biological diversity of the extensive territory occupied by Late Western Shield culture. Such a construct also ignores the effect of climatically induced environmental change in the adjacent regions of Ontario, Manitoba, and Minnesota (J.C. Ritchie 1969; H.E. Wright 1974) and the proximity of the area to the shifting Boreal Forest, Deciduous Woodland, and Parkland vegetation provinces with their different animal and plant resources. While there has been a tendency to emphasize the importance of seasonal fishing for 'Lake Forest Middle Woodland' cultures, including Late Western Shield culture (Stoltman 1973: 113), as representing a change in emphasis from the preceding ancestral Archaic populations, Middle Shield and Late Western Shield peoples appear to have followed similar subsistence practices except in those areas where wild rice was available. For example, Late Western Shield culture subsistence practices in the Lichen Woodlands of Southern Indian Lake in northern Manitoba or the Boreal Forest of the upper Albany River in Northern Ontario, were significantly different from subsistence rounds in the Great Lakes-St.Lawrence Forest of the Rainy River where there was access to foodstuffs such as bison and wild rice. Indeed, it has been proposed that the Late Western Shield culture spread into southeastern Manitoba was synchronous with the spread of wild rice and that the two events were likely related (Buchner 1979: 124).

Direct faunal evidence from Late Western Shield culture sites is rare due to soil acidity. Some animal remains, however, have survived. Bone preservation at the Naomikong site on the southeastern shore of Lake Superior in northern Michigan (Janzen 1968: 71) was variable with pH tests ranging from 4.3 (acid) to 8.3 (basic) suggesting that sodas from the ancient camp fires partially neutralized the otherwise acid soils but in an typically erratic fashion. Despite this partial neutralizing affect, only calcined bone survived. Mammals remains dominated over fish even though abundant netsinkers were recovered. The site location, however, suggests that fall fishing for whitefish was probably the major subsistence activity but that the processing the fish for winter consumption led to few remains being discarded at the site proper. In addition, fish remains are more fragile than mammal remains and less likely to survive the passage of time. If the common taboo against the burning of fish bones had prevailed at this time then direct evidence could not be expected. There was the added problem at this site that the Late Western Shield culture occupational debris was hopelessly intermixed with later occupations raising questions to what culture the surviving faunal remains pertained. Preservation of bone by the acid neutralizing affect of camp fire wood ash at the Heron Bay site (Wright 1967) was much better than at the Naomikong site, with abundant raw as well as calcined bone being recovered. Beaver and moose dominated the faunal remains which also included caribou, muskrat, varying hare, and bear. Fish remains were comparatively rare and were represented by round whitefish, char, lake sturgeon, northern pike, longnose sucker, and walleye/sauger. An unusual feature at this site was a thick lens of walleye scales where the fish had been skinned and the skins discarded together in a heap. At the Wabinosh River site near Lake Nipigon (Dawson 1981), large lake, major river and minor tributaries, aquatic, forest, and forest edge ecotones were all available for exploitation. Allowing for probable admixture from later occupations at the site, the major mammals represented were beaver, caribou, and moose with lower representations of varying hare, muskrat, dog, and some other minor species. Bird remains were rare but fish, particularly walleye and ling, were abundant suggesting a lengthy seasonal occupation. Walleye or pickerel as it is generally known in Canada (*Stizostedio vitreum*), can be most readily captured during the spawning period from spring to early summer whereas ling or burbot (*Lota lota*) spawn under the ice in mid-winter (Scott and Crossman 1973). The prevalence of these two fish species suggests a year-round occupation of the Wabinosh River site. None of the fish bones were burnt (Dawson 1981: 30) raising the possibility of a taboo against such treatment. Cautioned by the historical documentation on the ritualistic treatment of animal remains, including the disposal of bones away from the campsite, it would be hazardous in the extreme to assume that the remains from any particular site represented all the animals captured or even the relative importance of certain species. Fall spawning fish species such as lake trout (*Salveliones namaycush*) and white fish (*Coregonus clupeaformis*), for example, were more likely to be processed at fish camps for eventual winter consumption and, thus, could be seriously under represented in the faunal record; particularly if the filleted carcasses were fed to the dogs, a frequently recorded practice. On the Minnesota side of the Rainy River, faunal remains from the two McKinstry mounds consisted of 43% fish dominated by sturgeon, northern pike, and sucker, 54% mammal with the three most common species in order of frequency being beaver, moose, and groundhog (Lukens 1970). Some dog remains were also recovered. Bird and turtle were only represented by 3% of the total. Loon was the most common bird suggesting accidental capture in gill nets set for fish. While the site location indicates that early spring spawning lake sturgeon (*Acipenser fulvescens*) were likely a major attraction, the range of species indicates exploitation of a diversity of habitats with aquatic regions being more important than forest habitats. On the Ontario side of the Rainy River, the Long Sault site Late Western Shield occupation (Arthurs 1986) has produced mainly sturgeon and sucker followed by walleye and northern pike. Moose, deer/caribou and dog were present among the mammals. An important food available in the Boundary Waters region was wild rice (*Zizania aquatica*). At the Big Rice site in northern Minnesota charred wild rice and rice winnowing and parching pits have been dated to AD 250 (Reid and Rajnovich 1991: 220). It is speculated that the large populations of Late Western Shield peoples in the Boundary Waters area was only possible due to the exceptionally rich combination of animal and plant resources of the region; particularly wild rice and the large fat-rich sturgeon. The probable multi-family house structures uncovered in the Lake of the Woods area (Reid and Rajnovich 1985; 1991) and the high frequency of pottery vessels suggest an atypically high degree of sedentariness. It would appear that the spread of wild rice between 2,000 and 3,000 years ago into the Boundary Waters area (McAndrews 1969) eventually had a profound impact upon the local Late Western Shield culture bands once they had developed the specialized technology required to process the cereal (see Vennum 1988). Bison bone from the Late Western Shield culture occupation of the Bjorkland site (Buchner 1979: 113) suggests hunting in the nearby Parklands. Indeed, in this region of southeastern Manitoba forest, grassland, and parkland resources were all available. A small bone sample from the LM 8 site of the same region included beaver, lynx, muskrat, hare, otter, mink, mallard, loon, pike, and turtle reflecting the diversity of game captured. The Late Western Shield culture occupation of the Lockport site on the east bank of the Red River south of Lake Winnipeg (MacNeish 1958) contained elk, varying hare, deer, bison, fish, and shellfish with some evidence of increasing exploitation of the last two categories of animals. In the Boreal Forest vegetation province of Ontario and Manitoba several sites, in addition to the Heron Bay site, have produced faunal evidence. Beaver, muskrat, caribou, loon, and fish were recovered from North Caribou Lake on the headwaters of the Severn River (D.L. Gordon 1985). At the Pas Reserve site on the Saskatchewan River in northwestern Manitoba, Parklands were available immediately to the south. The low frequency of fish vertebrae (17%) to skull parts (43%) (Tamplin n.d.: 150-154) suggested that fish were being preserved by drying and smoking for consumption elsewhere. Major fish species represented at this site were walleye, northern pike, and ling. As the ling was predominantly represented by vertebrae it would appear that this fish, rich in butter fats, was being consumed on the spot unlike the other species. Ling is most easily captured during the winter under the ice when it spawns thus the remains indicate a winter occupation of the site. The most common mammals in order of frequency were muskrat, beaver, moose, bison, and possible dog. Just as Late Western Shield hunters at sites like Bjorkland (Buchner 1982) in southeastern Manitoba were able to exploit the ecotones of the Great Lakes-St.Lawrence, Parkland, and Boreal Forest vegetation provinces their kinsmen to the north at the Pas Reserve site were able to take advantage of both Boreal Forest and Parkland areas. Down river from the Pas Reserve site where the Saskatchewan River empties into Lake Winnipeg at Grand Rapids, the Tailrace Bay site (Mayer-Oakes 1970) lacked significant bone preservation but its location suggested that sturgeon fishing would have been important.

Given the range of environmental zones available to the different bands making up Late Western Shield culture, the variety of species evident in the subsistence evidence is understandable. A factor that appears to be common to all areas was the broad range of resources exploited. Carefully orchestrated seasonal rounds centred on big game-fish subsistence, punctuated with flexible opportunism, appears to be essentially the same pattern as that of the ancestral Middle Shield culture. As will be described in the section on **Settlement patterns**, the ancient pattern of establishing warm weather base camps where women, children, and the older people could tend the fish nets/traps and acquire other local resources while the hunters ranged out on the waterways in search of big game and items such as birch bark, spruce gum, suitable stone for tools, etc. appears to have been practised throughout most of the Late Western Shield culture territory. The only exception to the preceding generalization is the Boundary Waters region of Ontario and Minnesota and adjacent Manitoba where it is speculated that an increasing reliance upon the rich wild rice resource of the region led to greater population densities, sedentism, and social complexity as reflected in the participation in burial mound ceremonialism. The appearance of multi-family dwellings, according to some to be clustered into small villages such as the Ballynacree site (Reid and Rajnovich 1985; 1991), is also likely a reflection of an increasing reliance on the wild rice cereal crop. Direct evidence of the use of wild rice is limited. Late Western Shield (Laurel) culture sites and later settlement concentrations adjacent to wild rice stands do, however, support the likelihood that wild rice was harvested in some quantity (Rajnovich 1984). According to pollen records, wild rice was available in the area by 500 BC (McAndrews 1969: 1,678). As a seasonally dependable crop there can be problems with wild rice, which is subject to destruction by irregular (high) water levels (LaVerendrye 1968:

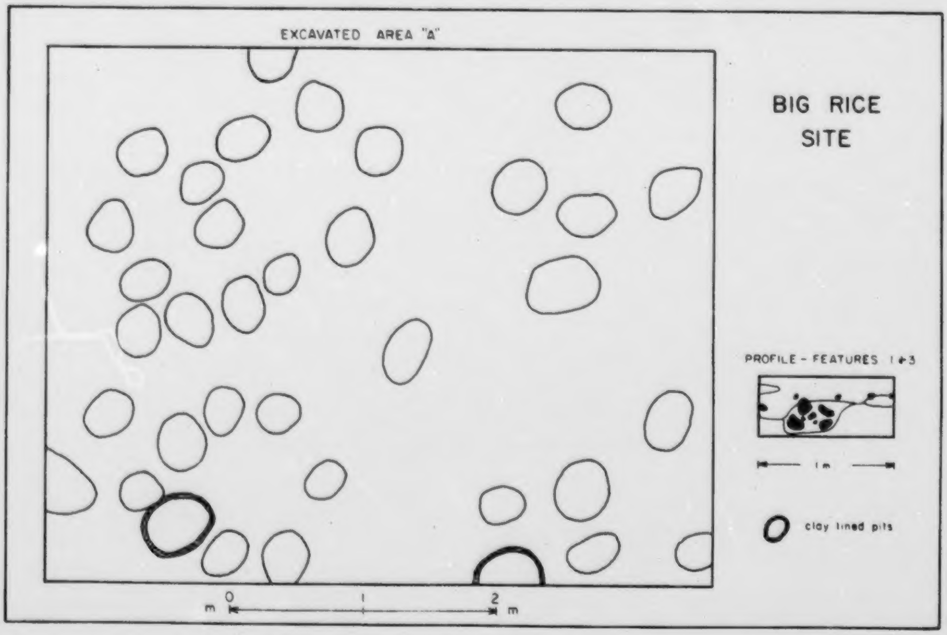


FIGURE 75: WILD RICE PRODUCTION An archaeological floorplan from the Big Rice site in northern Minnesota illustrates a dense clustering of parching pits and two clay-lined pits interpreted as 'jigging' pits. Parching involved roasting the green rice in order to preserve the grains (Vennum 1988: 118). Jigging rice involved people treading on the dried rice or, sometimes green rice, in order to hull it with the people acting as human 'thrashing machines' (Ibid: 129-130). Parching pits are filled with fire fractured rock and charcoal while jigging pits are clay lined and lack charcoal or rock. One of the pits contained only Late Western Shield culture pottery as well as carbonized wild rice (the process of carbonization frequently will preserve delicate plant materials) while the other pits contained a mixture of debris of Late Western Shield culture and the later Northern Algonquian culture. The profile to the right is of two intersecting pits on another area of the site with the pit to the right being a later intrusion into a Late Western Shield culture pit containing carbonized wild rice. It is apparent that 'ricing' sites were extensively used from Late Western Shield culture times on into present times. (Adapted from original floorplans provided by Gordon R. Peters, Superior National Forest Heritage Resource Program, Duluth, Minnesota. Drawings by Mr. David W. Laverie)

141; Vennum 1988: 22-26). On the other hand, when properly dried and stored wild rice is very resistant to spoilage.

Settlement patterns:

Given the wide range of environmental zones occupied by Late Western Shield (Laurel) culture it is not surprising that the extent of occupation of any particular region was different. Population densities would have been a direct reflection of the availability of food in the different vegetation provinces. In all instances, the major sites are either warm weather seasonal occupations or, on rare occasions, even year-round occupied base camps. Evidence of Late Western Shield culture in the northern Boreal Forest of the Hudson Bay Lowlands (Dawson 1976; Pilon 1987; Riddle 1981) or the Lichen Woodlands of Southern Indian and Gods lakes (Dickson 1980; Wright 1970), for example, is quite limited compared to more southerly areas. The northernmost sites may even represent seasonal forays from the south. Instrumental neutron activation analysis of Late Western Shield pottery from the Severn River, for example, suggests that the pots were not made from local clay (Pilon 1987: 211; Stimmell et al. 1986) and were likely brought into the region from the highlands to the south. Throughout most of its territory Late Western Shield culture developed in place from the preceding Middle Shield culture but this did not hold true for large areas of Manitoba and adjacent Ontario and Minnesota. During Period III and the early portion of Period IV prior to the appearance of Late Western Shield culture, these regions were occupied by Plains culture peoples (Pelican Lake complex or, with reference to The Pas region of west-central Manitoba, the McKean complex). The onset of cooler and wetter climatic conditions between 1,000 and 500 BC led to the gradual expansion of the forests at the expense of the parklands. As a result, "In eastern Manitoba, the southwesterly retreat of the Parklands and Grasslands would have reduced the number of bison wintering in this region. Certainly, bison were still present, but it is unlikely that these would be sufficient to support as large a Pelican Lake population as was previously the case. The seasonal cycle of these people would thus have shifted westward also" and "This subsequent Laurel immigration would have necessitated little if any alteration of subsistence modes, as Lake Forest and Boreal Forest resources would still have been available" (Buchner 1979: 113). Throughout most of its western and northwestern distribution Late Western Shield culture simply filled the void left by Plains peoples who were gradually drifting westward with the contracting Parklands and their wintering bison herds. On the basis of pottery styles, the Late Western Shield culture move into southeastern Manitoba was later (Buchner 1979; MacNeish 1958) than the occupation of west-central Manitoba (Mayer-Oakes 1970: 370) although much of the pottery from northern Manitoba (Wiersum and Tisdale 1977) and east-central Saskatchewan appears to be late. It has been noted that "It is likely that the Saskatchewan Laurel occupation has resulted from the movement of peoples west and north of the Saskatchewan River delta region" (Meyer 1983: 22).

Late Western Shield culture settlement patterns, as they pertain to the spring to fall segment of the seasonal rounds, cannot be appreciated without recognizing the role of water transport along the interconnected rivers and lakes. In this respect, Late Western Shield culture mimics its Middle Shield culture predecessor in the extensive use of watercraft. This included seamanship skills sufficient to travel across 25 km of open water on Lake Superior to reach Isle Royale and its native copper and game resources (Griffin 1961a: Plate III, fig. 1). The spread of Late Western Shield culture to the northwest and west would have been via the Winnipeg and English rivers into Lake Winnipeg and then north to the Saskatchewan River and its Sturgeon Weir tributary to the Churchill River and from the northern end of Lake Winnipeg down the Nelson River and over into the Hayes River drainage. Portable bark canoes permitted access to large blocks of territory and provided a rapidity of travel and mobility that was a prerequisite for survival in the resource poorer regions of the Lichen Woodland and northern Boreal Forest.

No large base camps are known from the Lichen Woodland vegetation province that extends from the Hudson Bay Lowlands to Southern Indian Lake in northern Manitoba. An example of a large Boreal Forest Late Western Shield culture base camp is the Heron Bay site at the mouth of the Pic River where it empties into Lake Superior. The site is regarded as a spring to fall base camp where women could harvest the rich local riverine and lacustrine fish resource while the hunters ranged up the Pic River and the nearby White River and Little Pic River drainages to set traps for beaver and hunt big game such as moose and caribou. Of the 46 projectile points recovered from the site 50 % were base fragments and 20 % were small fragments, the former suggesting weapon tip replacement with discard of basal fragments still attached to the arrow shaft at the base camp, and the latter possibly relating to animal carcasses with weapon tip fragments in their bodies being brought back to the camp by canoe. Cultural debris was scattered along the crest of an elevated strandline for nearly one km but was only concentrated in a narrow area approximately 60 by 9 m. Features were rare, consisting of a few hearths composed of a solid pavement of fire fractured rock, a natural tree-fall depression that had been used as a garbage pit, an erratic clustering of 25 post moulds in one region that may represent a 3 m diameter dwelling or, possibly, some form of drying rack, and a heap of fish scales that once represented discarded pickerel skins. Of note was the scarcity of charcoal in features, such as the surface hearths, suggesting that they had been exposed for a considerable period of time to the winnowing affects of wind and water before becoming capped with wind blown sediments. The Heron Bay site people appear to have been in relatively close contact with bands to the west as suggested by the frequency of Rossport chert whose geological source occurs on the coast nearly 100 km to the west. Taconite, a distinctive type of siliceous stone from the Gunflint Formations 320 km to west, freshwater shellfish from southern Manitoba or south of the Great Lakes (*Lampsilis radiata siliquoidea* and *Credonta costata*), and even obsidian from Wyoming, indicate limited and likely indirect contacts with more distant people. The single soapstone (steatite) blank and the presence of Saugeen and Meadowood pottery of Late Great Lakes-St.Lawrence culture origins all point to eastern contacts. With reference to the pottery, the relationship likely reflects the marriage of Late Great Lakes-St.Lawrence culture women to Late Western Shield culture men. A reciprocal presence of Late Western Shield culture pottery on the Saugeen complex Donaldson site was noted in Chapter 23. While the aforementioned exotic materials relate predominantly to west-east contacts, the abundance of Lake Superior native copper on sites of contemporaneous cultures to the south also suggests contacts in that direction.

Another large base camp, the Wabinosh River site west of Lake Nipigon, appears to have been occupied year-round (Dawson 1981). The probability that this site represented a semi-permanent core village with outlying satellite camps is supported by the high frequency of ling bones. Also known as burbot, the ling (*Lota lota*) is one of the rare freshwater fish to spawn under the winter ice in the shallow waters of bays and rivers (Scott and Crossman 1973: 642-643). It would only be at this time that ling could be effectively captured in nets and/or traps. While winter fishing under the ice may represent a Late Western Shield culture innovation, the faunal record from Period III Middle Shield culture sites is simply too limited to be certain when this particular practice first appeared in the Canadian Shield. Ling bones were also common in the Late Western Shield culture component of the Pas Reserve site on the Saskatchewan River in west-central Manitoba (Tamplin n.d.) suggesting that this site may also have represented a similar year-round occupation. Year-round occupation, of course, is not intended to imply that the entire community remained at the site on a permanent basis but only that some elements of society did.

Large Late Western Shield culture base camps in the Boreal Forest, such as Heron Bay, Wabinosh River, Pas Reserve, and Tailrace Bay, appear to be the exceptions to the rule. A number of small camps within ready commuting range of one another was likely a more common form of base camp. Such a dispersed settlement pattern strategy reduces the strain on firewood, fish, and other local resources, while still permitting convenient social interaction as determined by individual and family conditions or inclinations. Often, as was the case along the English River, the base camp actually consisted of a series of small camps strung out along the waterway at favourable locations but still within easy communication distance with one another. Such a dispersed base camp settlement pattern may have led to the belief that a dispersed settlement pattern of very small social units (Winterhalder 1981) characterized the Boreal Forest and that the large community aggregations are a post-European phenomenon. Such a summer time dispersed base camp settlement pattern is still practised and has been personally observed by the author on a number of instances at locales as distant from one another as Lac Seul in western Ontario and Southern Indian Lake in northern Manitoba. Indeed, this settlement pattern strategy was identified as one of the characteristic types in the Lac Mistassini and Lac Albanel region of north-central Québec (Martijn and Rogers 1969). The archaeological evidence is clear that both the concentrated and dispersed types of base camps existed long before the arrival of Europeans. Removed from the base camps, whether of the concentrated or the dispersed type, were smaller sites generally established as travel and hunt camps although other resources such as stone, bark, wood, etc. would have been exploited. Only the stone quarry sites where the chipped stone tool kit would be periodically rejuvenated or cores collected are readily recognizable as such in the archaeological record. Concerning such specific site functions as canoe building archaeologists would be advised to seek direction from local native elders rather than rely upon their severely limited knowledge of the country and its resources.

At North Caribou Lake, on the headwaters of the Severn River, a number of settlement pattern determinants have been proposed (D. Gordon 1985: 26-31). These are as follows: protection from the northern and west winds with preferably a southern exposure; well-drained flat land with ease of shore-water movement; locations with a variety of tree species, particularly rapid regenerating birch and spruce used for fuel and tools; and, in the summer, island sites for relief from biting insects, safety from forest fires, and as points of interception of island hopping moose and caribou. While it is undoubtedly true that factors such as avoidance of insect pests were secondary to other considerations (Reid 1980: 220), a ranking of a wide range of factors likely determined which sites were occupied, when they were occupied, for how long, and by what segments of the band. The high frequency of summer island sites at North Caribou Lake appears to be typical of the Lichen Woodland and Boreal Forest vegetation provinces.

In the fall, people would have concentrated on the harvesting and preserving of spawning whitefish and lake trout for winter consumption and then retired to winter hunt camps with their food stores. A majority of such winter camps are never likely to be located as most would have been situated on or adjacent to the frozen tributaries and streams which acted as winter highways. With the spring floods, of course, the winter campsites were either flushed downstream or scoured away by ice during break-up.

Late Western Shield culture occupation of the Parkland vegetation province, like that of the Lichen Woodland, appears to have been marginal when compared to the evidence from the Boreal Forest and the Great Lakes-St.Lawrence Forest vegetation provinces. It was the latter vegetation province that contains the greatest density of Late Western Shield culture sites, particularly in the Boundary Waters region of Ontario and Minnesota. The density of people undoubtedly reflects the more abundant animal and plant resources which characterize the Great Lakes-St.Lawrence Forest (Rowe 1972). Transportation in the region was also enhanced by the interconnected waterways. There is some limited evidence from the Long Sault site and other sites on the Rainy River, such as the high frequency of Late Plains culture projectile points manufactured from North Dakota chalcedony and probable associated pottery, suggesting that the Rainy River region may have acted as a multi-cultural trade fair not unlike the one historically documented for the Columbia River near the Pacific coast. A more detailed and broadly based examination and comparison of the pottery and stone tool styles from the region, as well as the finger-printing of exotic materials to their geological and biological (e.g. shell, bone) sources, will be required to test the preceding speculation.

The Long Sault site, overlooking the Long Sault Rapids on the Rainy River, contains a number of burial mounds including the largest known pre-European earthen mound structure in Canada. In association with the mounds at this obviously sacred site is abundant habitation debris representative of occupations extending from Plains culture to historically documented Ojibwa settlements (Arthurs 1986). The site was not only strategically located on a water route that interconnects in all cardinal directions with other regions but it was also situated at a juncture of the Parkland/Great Lakes-St.Lawrence/Boreal Forest vegetation provinces. Its occupants thus benefitted not only from the rich local resources but also from ready communication by water to an exceptional range of habitats as well as people. Covering 12 hectares along the River, portions of the site contained stratified deposits. Stratigraphy, however, could not be demarcated beyond a general cultural level. Features were represented by circular and oval hearths, some lined with fire cracked rock, and rarer, shallow circular to ovate pits located near the hearths and filled with ash. Ash lenses and circular rock alignments, which probably outlined hearths, were also recorded. High frequencies of sturgeon, suckers, walleyes, and northern pike indicate that the site was a warm weather base camp. It is speculated that, in addition to their religious function, the burial mounds at such large base camps acted as dramatic statements of territorial rights by specific family lineages. It is inferred that only a limited number of family lineages were involved in the construction of the mounds for if they were the product of a band or a number of bands far more burial mounds containing far more burials would be anticipated. On the Lake of the Woods to the west of the Rainy River, settlement pattern determinants related to access to and from major rivers flowing in and out of the Lake; location on the lee sides of islands and peninsulas that provided protection from the wind and thus safe water routes; and proximity to the local sources of cherts and rhyolites as well as the rich spring sturgeon and fall whitefish spawning grounds (Reid 1977: 32). Wild rice beds were also an important settlement consideration.

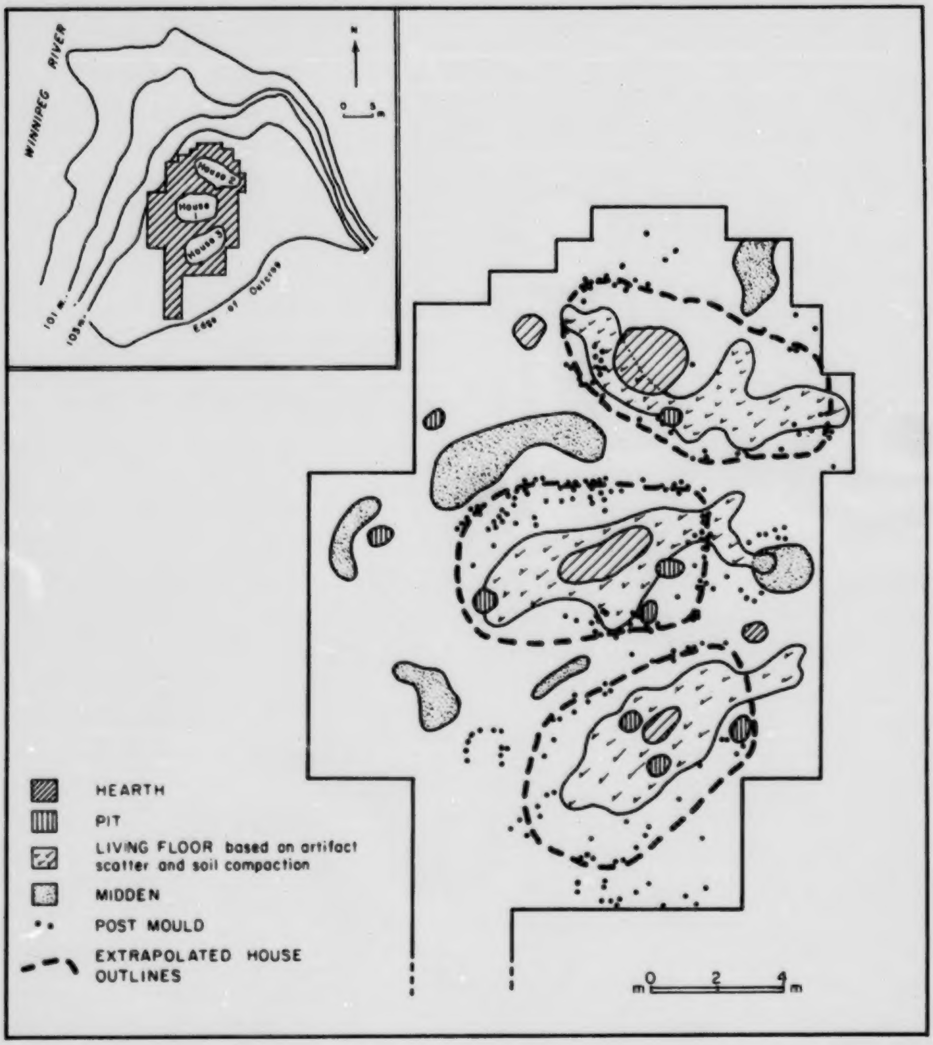

WINNIPEG RIVER
N
0 5 m
House 2
House 1
House 3
101 m.
103 m.
Edge of Outcrop
▨ HEARTH
▥ PIT
LIVING FLOOR based on artifact scatter and soil compaction
MIDDEN
• • POST MOULD
EXTRAPOLATED HOUSE OUTLINES
m 0 2 4 m

FIGURE 76: LATE WESTERN SHIELD (LAUREL) CULTURE DWELLINGS AT THE BALLYNACREE SITE Situated on the Winnipeg River at the northern end of the Lake of the Woods, the somewhat erratic outlines of three dwellings were determined on the basis of post moulds, central hearths, pits, and living floors demarcated by artifact distributions and soil compaction. While the configurations likely do represent the remains of dwellings, the basis for suggesting that they were contemporary and constituted a small village is not entirely convincing. (Adapted from Reid and Rajnovich 1991: Figure 9. Drawing by Mr. David W. Laverie)

To the southwest of Thunder Bay on Whitefish Lake, the MacGillivray site contained an unknown number of Late Western Shield culture seasonal occupations as well a burial mound but relatively little material pertaining to earlier or later cultures (Dawson 1980). Undoubtedly the adjacent wild rice beds and the abundant fish resources of the lake attracted people. The site covered an area 200 by 30 m along the northshore of the island. One metre diameter hearths demarcated by rings of 'boulders' with a northwest facing opening and containing refuse on top of burnt soil above a shallow 2.5 cm depression probably represent rice parching pits. Other features 50 cm in diameter and 35 cm deep with sloping sides have been interpreted as pits where the rice would be trod upon to break the grains loose from the chaff. The MacGillivray site compares more closely to sites in the Rainy River region than sites along the northshore of Lake Superior.

The most fully excavated of the Boundary Waters sites is the Ballynacree site (Reid and Rajnovich 1991), situated near a waterfall on the Winnipeg River at its outlet from the Lake of the Woods. In proximity to a wild rice bed, the site is interpreted as a village consisting of three ovate multi-family dwellings that are assumed to be contemporary on the basis of their more or less parallel alignment and other evidence (Figure 76). Since the three houses occupied a north facing point in the river and backed into the base of a vertical cliff to the south it presumably represents a warm weather occupation. Thirty-three people are estimated to have occupied the 'village'. However, given the multi-component nature of this site, with occupations ranging from Middle Plains culture to the time of European contact, it cannot be assumed that all of the materials from within the houses pertain to the house occupants. This probability was ignored and all of the projectile points, which typologically range from the Period III Middle Plains culture Oxbow complex to Period V Northern Algonquian culture triangular and notched arrowheads, are assumed to be contemporary (Reid and Rajnovich 1991: 201-202 and Figure 23). The 13th and 14th century calibrated radiocarbon dates from the site are also too late as they are in direct contradiction of existing stratigraphic evidence. Both stratigraphic and elevated beachline dating demonstrate that Late Western Shield culture was ancestral and not contemporary with the Northern Algonquian culture of Period V (Blackduck and Selkirk complexes). Central hearths composed of fire fractured rock and small 30 cm deep pits occurred inside the houses with middens outside although how much cultural admixture, resulting from sequential occupations of the site, has been inserted into this reconstruction is unknown. Other similar sites such as Ballysadare, Fisk, Bundoran, and Meek (Reid and Rajnovich 1985; 1991) have similar tenuous structures where stratigraphy was controlled "...by examining the associations of artifacts of known cultural affiliation coupled with statistical tests and radiocarbon dating where possible for each three-centimetre level" (Reid and Rajnovich 1985: 6). Problems with the archaeological reconstruction of the Ballynacree houses

(Reid and Rajnovich 1991: Fig.3) are the erratic post mould patterns and a hazardous reliance upon soil colour changes to identify house floors. Best defined in terms of posts, House 1 at the site actually becomes a 7 by 5 m structure if soil colour is ignored. While the evidence would suggest that dwellings are involved, the cultural contents of said dwellings at these multi-component sites cannot be assigned on the basis of their 'known cultural affiliation' to a specific house. Further, the time dimension, represented by multiple seasonal occupations, cannot be controlled and, thus, the statistical tests are meaningless. Radiocarbon is far too crude a methodological tool to attempt to isolate components. Thus regarding the house 'contents' as being representative of discrete components is considered here with considerable scepticism. While the pottery vessels attributed to the three houses at the Ballynacree are similar to one another, they are no more so than with distant sites such as the Hungry Hall site on the Rainy River (Reid and Rajnovich 1991: Table 2). Exotic stone from the Ballynacree site were judgementally as opposed to petrographically/chemically identified as being mainly Hudson Bay Lowlands nodular chert and a green chert likely from the Lac Seul area to the north. Also present were Knife River chalcedony from North Dakota, taconite from the Gunflint Formation of the Thunder Bay-Quetico region, and Selkirk and Swan River cherts from Manitoba. Two flakes of Wyoming obsidian were also recovered.

Not all Late Western Shield culture structures in the Boundary Waters area are of ovate form. At the Bundoran site (Reid and Rajnovich 1985) a concentration of small weight stones delineated a structure measuring 4 by 3.5 m that lacked interior features. The dwelling resembles a house excavated at the River Point site in the Superior National Forest of northeastern Minnesota (Peters et.al. 1983: 112, fig.35; see Figure 77). Outlined by small peripheral weight stones the aforementioned dwelling measured 3.5 by 3 m, contained two hearth floors and a north facing entrance. Both the size of these roughly circular structures and the twin hearths at the River Point site suggest that they would have housed two families. Other dwellings in the Boundary Waters region which have only been partially excavated, such as at the Lady Rapids site (Callaghan 1982: 14) and the Fisk site (Rajnovich et al. 1982), involved lines of support posts inside a ring of weight stones. Judgementally identified exotic materials from the latter site consisted of Knife River flint from North Dakota, Cathead and Selkirk cherts from Lake Winnipeg, Swan River chert from western Manitoba, and obsidian from Wyoming (Ibid: 96). Nearby Wabigoon Greenstone Belt cherts and rhyolites, Hudson Bay Lowlands nodular cherts, and quartz were the most common materials used at the site but their association with the Late Western Shield occupation as opposed to earlier and later occupations is unclear despite considerable diligence by the excavators to isolate discrete living floors.

The large Late Western Shield culture habitation sites associated with burial mounds along the Rainy River and environs have interesting parallels with the Point Peninsula

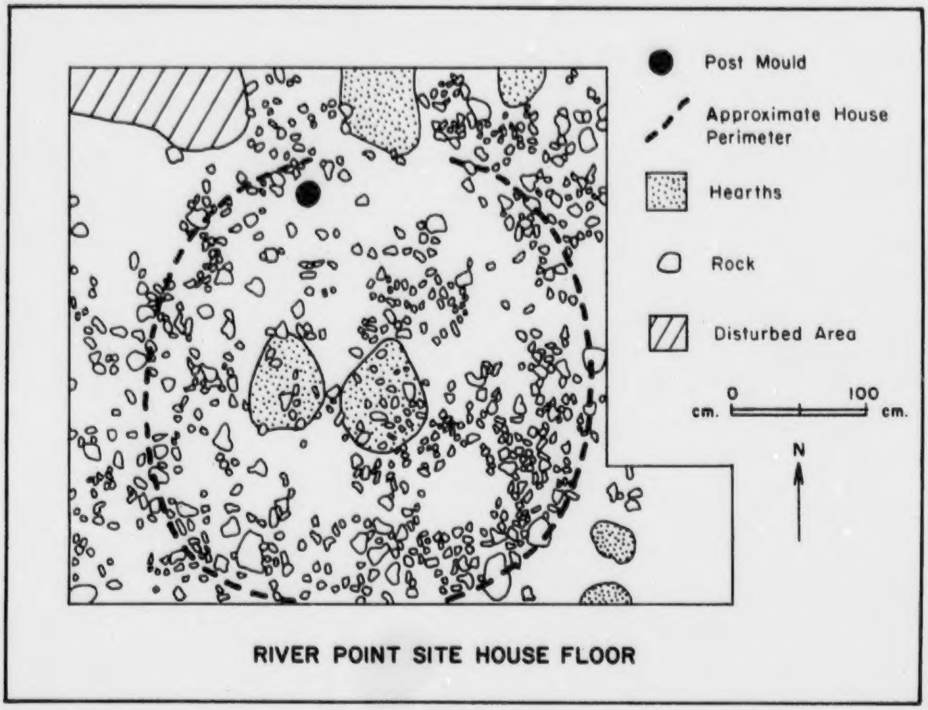


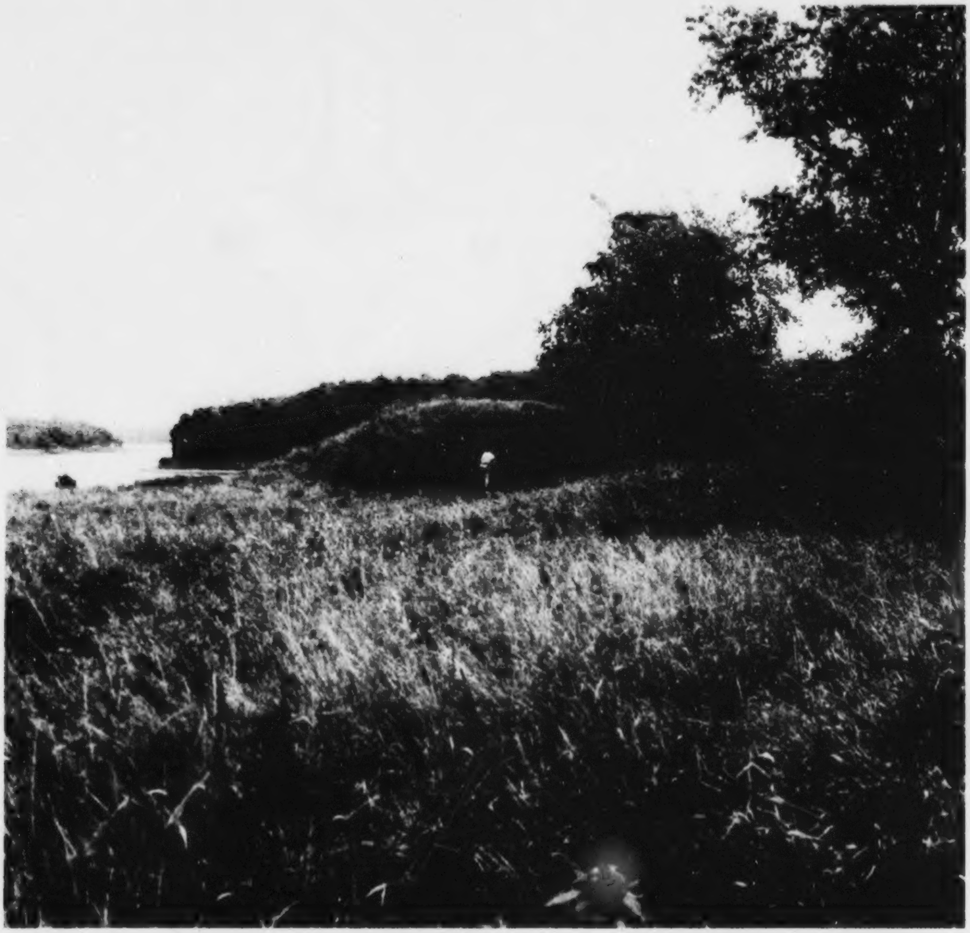
FIGURE 77: THE RIVER POINT SITE DWELLING This Late Western Shield culture dwelling at a site in northern Minnesota was demarcated by compacted soil within the structure and by peripheral stone fragments that would have acted as weightstones to hold the dwelling cover in place. (Adapted from Peters et. al. 1983: Figure 35. Drawing by Mr. David W. Laverie)

habitation-burial mound Late Great Lakes-St.Lawrence culture sites on Rice Lake in Southern Ontario. In addition to the burial mounds, both site concentrations are situated in rich wild rice and aquatic resource areas at the mouths of tributaries emptying into a major river. Rice Lake is actually a widening in the Trent River. The individual mound clusters along the Trent River appear to mark specific band territories and a similar function is proposed for the Rainy River settlement pattern even if in both instances all band members were not buried in the mounds.

The only major Late Western Shield site in the Parkland vegetation province is the stratified Lockport site on the east bank of the Red River (MacNeish 1958). It is reasonable to assume that these people originally reached Lake Winnipeg via the

Winnipeg River and then moved up the Red River. Levels 9 and 10 of the Lockport site exhibited a wide spectrum of resource exploitation with fish, bird, elk, hare, deer, bison, and shellfish being represented. In the subsequent Late Western Shield culture levels 7 and 8 of the same site, fish remains were predominant and bison remains were "...outnumbered by bones of deer, elk, beaver, bear, fox, and turtle" (Ibid: 61) and shellfish remains were common. Both the nature of the recovered faunal material and the paucity of bison relative to other animals would suggest that the Late Western Shield occupation of the Parkland, at least at this site, was a summer event rather than a winter one when bison would have been more available. As with the Lichen Woodlands, the Late Western Shield culture occupation of the Parklands appears to have been a peripheral one, likely seasonal.

A major Late Western Shield culture occupation on Whitefish Island beside Whitefish Rapids where Lake Superior empties into Lake Huron cannot be properly assessed as it has yet to be described in detail (Conway 1977a; 1981). It is a reasonable supposition, however, that people were attracted to the region for the same reason as later fishermen. In the fall, spawning whitefish would congregate in the rapids in enormous numbers and it is historically documented that fish were captured with dip nets operated from canoes in the rapids. As other known fish capturing techniques would have been impractical is such a body of fast water, it is probable that the dip net-fast water fishing method was part of Late Western Shield culture technology. A relatively short distance to the west on the southern shore of Lake Superior of northern Michigan is the fully described Naomikong site (Janzen 1968). This major multi-component base camp was situated beside a historically documented whitefish fall spawning ground. The sand beach, convenient for launching and landing canoes and the availability of local chert, were other obvious assets. Regrettably, mixture with later occupations does not permit an accurate isolation of the Late Western Shield culture occupation. Unlike the Heron Bay site on the north side of the Lake, features were common at the Naomikong site. Refuse pits with concentrated fire cracked rock (ovens?) and hearth pits filled with fire fractured rock were particularly abundant. Hearths were generally ovate in outline, less than 0.3 m deep, 0.8 m in width and ranged from 1.8 to 1.0 m in length although circular features are also noted. A possible drying rack associated with a smoke pit was recorded (Janzen 1968: 30). The erratic distribution of post moulds have been interpreted as the remains of probable fish drying racks. Despite cultural mixture at the site, an effort was made to correlate artifacts and ecofacts (e.g. fire cracked rock, charred bone, etc.) distributions. While some suggestion of workshop areas, such as heat-treated chert concentrations, were indicated, the inability to isolate components at this site limited the utility of such exercises no matter how analytically or statistically precise.



BLACK AND WHITE PLATE XXXII: A LATE WESTERN SHIELD (LAUREL) CULTURE BURIAL MOUND ON THE LONG SAULT SITE Situated on the north bank of the Rainy River in Northern Ontario, this mound represents the largest pre-European man-made feature in Canada. The 2 m tall author in front of the mound provides an impression of scale. A cut through the edge of the mound visible in the photograph was done by a curious bulldozer operator. The site is now protected within the Manitou Mounds Provincial Park Reserve, a two km long portion of the Ontario side of the Rainy River below the Long Sault Rapids. (Reproduced from Wright 1972: Plate 13)

Cosmology:

Features that can be attributed to the cosmology system of Late Western Shield culture are the burial mounds of the Boundary Waters region and, in particular, the Rainy River, and probably some of the invocation pits of the upper Great Lakes and westward into southeastern Manitoba. There is also a Late Western Shield culture multiple burial from a site in northern Michigan. A possibility that some of the rock paintings of the Canadian Shield pertain to Late Western Shield culture cannot be demonstrated at this time.

Late Western Shield culture burial mounds along the Rainy River represent the largest pre-European earthen structures in Canada although the largest mound on the Ontario side of the River is dwarfed by the Smith Mound 1 or Grand Mound on the Minnesota side. When recorded in 1884 this mound stood nearly 14 m in height and possessed an ovate base measuring 36 by 27 m (Bryce 1904: 15). Recently a 65 m long, low earthwork in the form of a serpent, has been identified extending from the western edge of the mound (Budak and Reid 1995). Most information pertaining to these mounds comes from work carried out on the Minnesota side of the river (Stoltman 1973; Wilford 1943). Mounds usually range from 15 to 25 m in diameter with heights between 1.5 and 2.6 m. Fill used in mound construction was generally a combination of surface scrapings of village debris and soil excavated from barrow pits. Concentrations of mounds along the Rainy River occur at the three major rapids, which also correlate with the embouchures of tributaries (Arthurs 1986: 136). While the cultural stimulus responsible for burial mound ceremonialism obviously stemmed from Hopewell culture in southern Minnesota, Late Western Shield culture interpretation of appropriate ceremonialism differed in a number of significant respects from that of the Hopewell culture donor; a situation not unlike what was noted in Southern Ontario and New York regarding the Point Peninsula complex of Late Great Lakes-St.Lawrence culture participation in the Hopewell mortuary complex of the Ohio Valley. It is likely that mound ceremonialism was transferred to Late Western Shield culture from the Malmo culture of central Minnesota (Wilford 1955: 135). Malmo culture calibrated radiocarbon dates (Klein et al. 1982) from the Morrison Mound 13, Anderson, High Island (Johnson 1964), and Vanderbloom (Reeves 1970) sites range from 700 BC to AD 500 although the earliest date appears to be too early. The dates, however, do indicate that there was an early appearance and persistence of burial mound construction in Minnesota and presumably adjacent Ontario. The relationship of Malmo culture to Late Western Shield (Laurel) culture is not only seen in the sharing of certain specific burial mound traits, such as mound size and the interment of secondary bundle burials usually lacking grave offerings except for red ochre, but also in the suggestion that Malmo culture was in terms of pottery characteristics intermediate between the Hopewell culture of southern Minnesota and the Late Western Shield culture in the northern portion of the state (Wilford 1955; Wilford et al. 1969).

Information on the Late Western Shield culture burial mounds of Minnesota along the Rainy River will be considered first followed by the evidence from the Ontario side of the River and adjacent regions.

Smith Mound 4, in the same mound cluster as the aforementioned Grand Mound (Stoltman 1973; Wilford 1950), was 15 m in diameter and stood approximately 1.5 m in height. Secondary bundle burial was the most common interment method used for the 73 adults and 40 juveniles buried in the mound. As the burial sequence was periodic rather than a single event, however, later burials frequently disturbed earlier ones making accurate identification of mode of burial difficult to determine. One hundred and three individuals or more than 90 % of the burials were found in a 3.7 m^2 area immediately south of the centre of the mound. Vertical patterning in this area of burial concentration suggested four different burial episodes. Grave offerings were absent from the burials proper except for red ochre but there was a complete pottery vessel in the mound fill that would have represented an offering. Other probable grave offerings not directly associated with burials were the nine antler and bone toggling harpoons, the six worked beaver incisors, and a bone arm band (Wilford 1952), all of which occurred in the mound fill. As will be seen, the inclusion of complete artifacts in the mound fill rather than directly with the remains of the deceased was a common Late Western Shield culture burial trait.

Many of the bundle burials consisted only of the skull and longbones, with the latter frequently placed in a stacked pile beside the skull and the jaw inverted over the bone bundle. Evidence of dismemberment and perforation of skulls and longbones was common. With reference to the longbones, a hole was punched through the posterior surface at the end of the marrow chamber, usually at the distal end of the femora (upper leg bone) and slightly less frequently at the proximal ends of the tibia (larger of the two lower limb bones) and the humerus (upper arm bone). Unmodified longbones were more likely to be juvenile than adult. Breakage at the base of the skull permitted brain removal. Such practices were common in the Hopewell mortuary complex and a single instance has been recorded from the Saugeen complex Donaldson site in Southern Ontario (Finlayson 1977: 272-273). Most torsos were absent from the bone bundles and were presumably left at the original cemetery or charnel house. Preparation of the body prior to burial involved dismemberment, removal of the brain and longbone marrow, retention of the skull, mandible and longbones for eventual placement on the mound with a sprinkling of red ochre and a final covering of earth. The symbolic significance of brain and marrow removal and selective skull-longbone burial will never be known but similar historically documented practices by other cultures around the world suggest that these acts were intended to reintegrate the deceased with the living. As the use of Smith Mound 4 involved periodic burial episodes, the mound increased in size through time. In this mound, as in most others, flexed in-flesh Period V Northern Algonquian culture (Blackduck complex) burials occurred. Blackduck complex was a descendant of Late Western Shield culture and it appears that the cultural relationship to these sacred monuments was clearly recognized by the later people. In fact, some mounds including the Smith Mound 4 and the McKinstry Mound 2, appear to have started out as Late Western Shield culture mounds and ended with Blackduck complex mound building stages (Johnson 1964: 45-46). The major burial activity at the Smith Mound 4, however, appears to have involved the cumulative burial of members of a lineage or selected band members whose remains were brought to the sacred place as bundles to be placed in the mound with their pre-deceased kinsmen. A physical as well as emotional bond with past generations of kinsmen would also strengthen secular claims to the territory for, as has been previously noted, these sacred sites were also major base camp sites situated in very favourable resource and communication centres.

At another cluster of Minnesota mounds on the Rainy River the picture is not as clear concerning their Late Western Shield culture authorship as was the case with the Smith Mound 4 (Stoltman 1973). The McKinstry Mound 2 appears to have been predominantly a Period V Northern Algonquian (Blackduck complex) culture mound with just a suggestion of initial Late Western Shield culture involvement. In contrast, the McKinstry Mound 1 contained predominantly Late Western Shield culture refuse. Mound fill was composed of habitation debris applied in two stages of construction. Two hearths on the original sod level of the mound floor and one that cut into the subsoil all contained refuse and may represent pre-mound features. Human bone was scattered throughout the mound. Objects in the mound fill included projectile points, side and end scrapers, bone awls, perforated moose and caribou toe bones, bird bone tubes, toggling harpoons, beaver incisor knives, perforated bear and lynx canines, a copper awl and bracelet, and two marine shell necklaces. Some of these items could pertain to Period V offerings but most are typical Late Western Shield culture traits. The generally unbroken condition of the objects suggests that they actually represent offerings and not accidental inclusions. Placement of offerings on the mound during the addition of soil after the bodies had been covered rather than directly with the deceased constitutes a distinctive Late Western Shield culture burial trait.

At the Long Sault site on the Ontario side of the Rainy River eleven Late Western Shield and Period V Northern Algonquian culture (Blackduck complex) mounds parallel the Long Sault Rapids in association with habitation debris which extends along the shore for approximately 2.5 km. The largest Late Western Shield culture mound in this grouping is 34 m in diameter and stands 7.3 m, although much of the impression of height was achieved by building the mound over the terrace edge (Arthurs 1986). With its estimated 1,900 cubic metres of fill (Ibid: 21) it represents the largest pre-European earth structure in Canada (Plate XXXII). Two ditches, 3 m and 1.5 m deep immediately to the east of the mound, are the remnants of barrow pits dug for fill during mound construction.

The only excavated Late Western Shield culture mound on the Ontario side of the Rainy River is the Armstrong Mound (Figure 78) at the Long Sault site (Kenyon 1971; 1986). The mound was 20 m in diameter, stood 1.8 m high, and was composed of 578 cubic metres of nearly sterile heavy clay. On the mound floor, resting on the old sod layer was a rectangular crib. The charred ends of the crib logs indicated felling by a process of burning and chopping. Within the crib were three separate burial units placed upon a layer of brush. Burial 1 contained bone bundles representing 4 adults and 2 children whose remains had been mixed together and sprinkled with red ochre prior to placement in the mound. Cut marks suggest dismemberment. Burial 2 was a flexed child and burial 3 consisted of 3 adults, 1 teenager, and 2 child bundle burials with the adults and teenager occurring as discrete bundles. Mound construction appears to have been a single event rather than an accretionary affairs with distinct episodes of construction.

A radiocarbon date from the charred, central log crib provided a reading of 1010 +/- 100 (I-2594) that calibrates between AD 865 and 1230. The date is rejected in favour of an estimated age for the mound of between AD 1 and AD 500 for the following reasons: to accept the radiocarbon date would place the mound in Period V and, thus, contemporary with Northern Algonquian culture despite the fact that the latter culture always occurs stratigraphically above Late Western Shield culture occupations; the recorded burial traits are more in accord with Late Western Shield burial practices than the later Blackduck complex burial practices of Period V; and both the stone platform pipe, manufactured from possible Ohio Valley pipe stone, and a stone tube with frogs carved in low relief on both faces, are more appropriate to the earlier estimate as are the nine complete projectile points recovered from the mound fill. These included Late Plains culture Besant complex type points manufactured from Knife River chalcedony (Kenyon 1971: Figure 6). All of the preceding artifacts were regarded by the excavator as being accidental inclusions in the mound fill (Ibid: 74) but a complete platform pipe, a zoomorphic stone tube, and nine complete projectile points, all manufactured from exotic materials, do not reflect usual discard behaviour or what is normally recovered from habitation debris. Further, there is no reference to common habitation debris objects such as fire fractured cooking stones, chipping detritus, broken stone tools, or animal bone refuse although pottery inclusions are described (Kenyon 1971). It is acknowledged

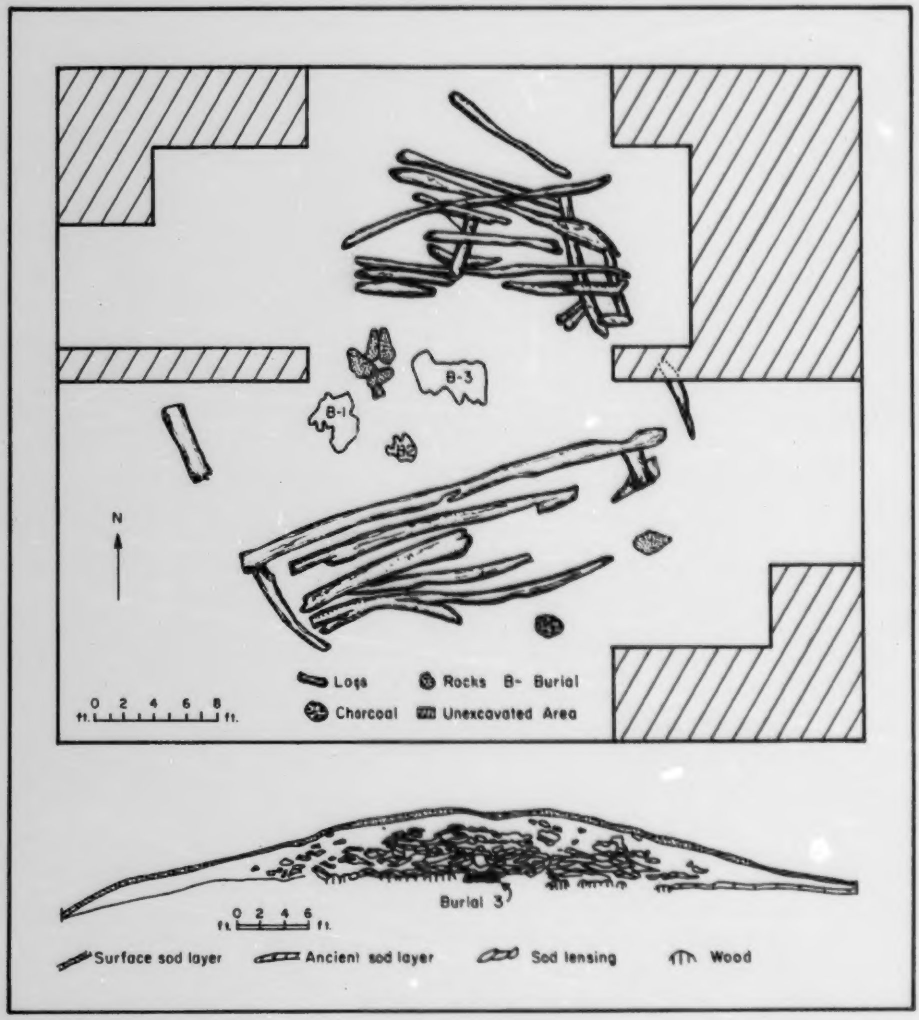

B-3
B-1
B2
N
Logs
Rocks B- Burial
Charcoal
Unexcavated Area
0 2 4 6 8
ft. ft.
Burial 3
0 2 4 6
ft. ft.
Surface sod layer
Ancient sod layer
Sod lensing
Wood

FIGURE 78: FLOORPLAN AND PROFILE OF THE ARMSTRONG MOUND, LONG SAULT SITE The floorplan illustrates the log crib on the floor of the mound and the location of the three burial pits. A distinctive form of lensing apparent in the profiles has been interpreted as the result of using sods in mound construction. (Adapted from Kenyon 1971: Figures 4 and 5. Drawing by Mr. David W. Laverie)

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that at least some of the 26 scrapers, 16 lumps of "...hematite, goethite, limonite and yellow ochre..." (Ibid: 76), some with grinding facets, a copper bead, and two zoomorphic natural stones, likely do represent offerings. The probability of offerings being placed on the mound surface during the interment process rather than directly with the bodies was suggested with reference to recoveries from the Smith Mound 4 and McKinstry Mound 1 on the Minnesota side of the Rainy River. While the Armstrong Mound is accepted as a Late Western Shield culture mound, its radiocarbon date is rejected and, in addition, the complete artifacts from the mound fill are regarded as associated ceremonial offerings and not accidental inclusions in habitation debris used in mound construction. In fact, the mound fill consisted of sterile clay.

Mound burial was restricted to a small segment of the local Late Western Shield community suggesting some form of social hierarchy. As children were included in this hierarchy, the ranking must have been based upon birth rather than personal status. This would suggest membership in a specific family lineage or some other socially cohesive group with a sanguine or fictive common ancestor. A similar situation was noted with reference to the Late Great Lakes-St.Lawrence culture (Point Peninsula complex) mounds on Rice Lake in Southern Ontario. In both instances the numbers of individuals in the burial mounds would only account for a minuscule percentage of the deceased members of the entire community. In both the Rainy River and Rice Lake instances, the correlation of burial mound ceremonialism, rich aquatic and wild rice locales, and the evidence of social ranking, are regional deviations from the normal practices of both cultures. Unlike the Rainy River situation, however, the Rice Lake burial mound ceremonialism did not survive into Period V.

The looted MacGillivary site mound is situated on an island in Whitefish Lake southwest of Thunder Bay, Ontario (Dawson 1980). As with other mound sites, the region is rich in both wild rice and fish. Measuring 15 m in diameter and standing 1 m in height, the mound was not constructed of nearby village debris but rather of fill from an adjacent barrow pit. One inclusion in the mound fill was a rectangular bark container likely used for transporting fill. The mound covered a central crypt dug 1/3 m into the subsoil which was cribbed with logs and then covered with large boulders. Disturbed adult and child bones were recovered from the crypt along with a broken stone preform and the prune pits of the vandal's lunch. A radiocarbon date, calibrating to approximately 2,000 years, was obtained from the wooden mound crib. Dawson's speculation that the mound was pre-village in age because of the date and the late appearance of much of the pottery from the site is not convincing given the questionable accuracy of preconceived age estimates of pottery styles in the region.

The western-most possible Late Western Shield culture burial mound is the 9 by 4.6 m and 1.2 m high mound near the Bjorkland site in southeastern Manitoba (Steinbring

1980: 75). It is possible, however, that this structure could pertain to the later Northern Algonquian culture (Blackduck) occupation of the site (Buchner 1982).

A totally different class of features from the burial mounds which appear to relate to Late Western Shield culture religious practices are the stone structures of the northshore of the upper Great Lakes and westward into southeastern Manitoba. Although such features along the northshore of Lake Superior have been mainly attributed to Algonquian-speaking peoples between AD 800-1650 (Dawson 1981), there is tentative evidence that Late Western Shield people may have initiated the practice. Sites are usually situated on elevated coastal boulder beaches in areas devoid of significant food resources and exposed to the elements. They can also occur as single features some distance up river valleys. Structures usually consist of pits constructed by stacking cobbles and boulders around the depression resulting from their removal from the natural beach surface. At the Red Sucker Point site near Marathon, Ontario, a native copper projectile point was recovered from a pit on one of the higher elevated strandlines (Emerson 1959). Both the point style and the height of the feature above the present lake level would suggest a Late Western Shield culture (Laurel) authorship. A short distance up the Pays Platt River, north of the Late Western Shield culture Pays Platt site (Wright 1967), I was taken to one of these features by Mr. Lawrence Mushwash, a native elder, who described it as a "Thunderbird Nest". Thunderbirds are supernatural beings in the traditional belief system of northern Algonquians as well as other native people. The association of the stone features with these powerful mythological beings, an association which is also recognized in southeastern Manitoba, emphasizes their ritual function. The Pays Platt River 'nest' was located 45 m back on a high ridge overlooking the River to the west. It had an interior diameter of 1.7 m and an exterior diameter of approximately 7.0 m, largely due to some of the walls collapsing. Walls are composed of large boulders ranging, from 0.3 to 0.6 m in diameter, but the natural land surface floor of the pit is sand. Boulders for construction purposes were locally abundant in the sand matrix of the ridge. Maximum height of the feature was 1 m above the ground surface. At the Thunderbird site in southeastern Manitoba (Carmichael 1981) a 2.0 by 1.8 m Thunderbird Nest with a 0.5 m depression was composed of boulders weighing from 20 to 50 kg. It is attributed to the Late Western Shield culture occupation of the site. The association of the feature and habitation debris is an exception to the generally isolated locations of such features. In terms of function, the pits have usually been interpreted as vision quest or invocation structures or possible conjurers lodges (Dawson 1981; Emerson 1959). For example, the spirit helpers of the historically documented prophesy shamans, called Jessahhids (Vastokas and Vastokas 1973: 36), were Turtle and Thunderbird. Such an explanation would help explain the present day Ojibwa attribution of the features as Thunderbird Nests.

A suggested association of Late Western Shield culture with the southeastern Manitoba Astwood site and its nearby petroforms (Steinbring 1980: 258-267) or with the Tie Creek and Bannock Point petroform sites (Ibid: 88) is not yet based upon substantive evidence. Petroforms are naturalistic and geometric configurations realized by arranging cobbles on a flat bedrock surface. Similarly, the proposition that rock art in the Lake of the Woods region pertains to an unbroken sequence extending from Archaic times to European contact (Reid 1979; Steinbring 1979) is not yet based upon convincing evidence. It has been speculated that the rock art of the Canadian Shield may be 2,000 years old and therefore initiated by Late Western Shield culture (Rajnovich 1994). Usually occurring as naturalistic and abstract figures painted in red near the base of imposing cliff faces where the cliff enters the water, they are a ritualistic phenomena related to medicinal curing associated with the powers of mythological beings who reside in the cliff and whose assistance could be sought by human shaman supplicants.

A final feature pertaining to Late Western Shield culture cosmology is a burial in northern Michigan (Bettarel and Harrison 1962). The burial was associated with the Arrowhead Drive site on Bois Blanc Island in the Straits of Mackinac between Lake Michigan and Lake Huron (McPherron 1967: 226-229). Nine individuals representing six adults, a subadult, and the fragmentary remains of two infants had been placed in a single grave. The articulated remains of the adults and the subadult were buried in flexed positions. Only four of the bodies were complete with the others lacking skeletal elements suggesting either secondary burial or possibly a drowning accident with late recovery of the bodies. Grave offerings consisted of a pottery vessel and a beaver incisor knife hafted in an antler handle placed with the subadult, and a bag of tools near the head of an adult male. The bag contained three small bifacially flaked knives, a single side-notched knife or point, a side-notched point, two flakes, three 'hematite' plummet-like objects, a rectangular fragment of sedimentary rock pointed at one end, two pebbles, two angular fragments of rock, the cut jaw bone of a black bear, two bone points, a bone chisel, 47 fragments of bird and mammal bone preforms for tool production, and 24 beaver incisor fragments. A date of approximately 100 BC would be in accord with the Hopewell culture traits of the cut bear mandible and hematite cones. Projectile points and pottery from the habitation area of the Arrowhead Drive site indicates that the site pertains to Late Western Shield culture, a proposal strengthened by its proximity to related sites at Sault Ste. Marie (Conway 1981) and the southeast shore of Lake Superior (Janzen 1968).

External relationships:

Late Western Shield culture neighbours were Late Eastern Shield culture in western Québec, Late Great Lakes-St.Lawrence culture of the lower Great Lakes and upper

St.Lawrence Valley, southern upper Great Lakes cultures like North Bay and Summer Island, Late Plains culture to the west and southwest, and Late Northwest Interior culture (Taltheilei complex) and Middle Palaeo-Eskimo culture to the north and adjacent to Hudson Bay.

A small number of Late Western Shield culture pottery vessel fragments from sites in western Québec (Burger 1953; Marois et Gauthier 1989) and adjacent Ontario (Ridley 1966) may represent evidence of Late Western Shield culture women marrying into the bands of the related Late Eastern Shield culture people rather than indicating an actual Late Western Shield culture presence. Evidence of relationships with more northerly cultures is even more sparse. There has been a suggestion that the Late Western Shield culture abandonment of the Southern Indian Lake region and other parts of northern Manitoba was due to Late Northwest Interior culture (Taltheilei complex) incursions (Dickson 1976: 39; 1980) although the Late Western Shield culture occupation of this area of the Churchill River was marginal at the best. Evidence of possible contacts with Middle Palaeo-Eskimo people is represented by a soapstone vessel from a site on the Saskatchewan River near its embouchure into Lake Winnipeg (Mayer-Oakes 1970). Relationships to the south also appear to be limited. Burial mound ceremonialism of Late Western Shield culture in the Boundary Waters region of the Ontario-Minnesota border, while originating with the Hopewell mortuary complex of the Ohio and Illinois valleys, was filtered through the intermediary Malmo culture of central Minnesota (Wilford 1955). In a number of respects, Late Western Shield culture burial mound practices shared more with the burial mound ceremonialism of eastern Late Plains culture (Besant complex) than with the Hopewell heartland in Ohio and Illinois (see Neuman 1975; Dyck 1983: 113-115). Occasional Hopewell mortuary complex items would reach Late Western Shield culture sites, such as the Ohio pipe stone platform pipe recovered from the Armstrong Mound on the Rainy River (Kenyon 1986). Evidence of Hopewell mortuary complex influences on eastern Late Western Shield culture sites, such as Arrowhead Drive (Bettarel and Harrison 1962) and Naomikong (Janzen 1968), is weak being represented at the former site by only a cut bear mandible and hematite cones. There is relatively little evidence that Late Western Shield culture participated in the Hopewellian Interaction Sphere in any significant way despite suggestions to the contrary (Arthurs 1986: 139). Certain pottery correspondences exist with both North Bay culture (Mason 1966) and Summer Island culture (Brose 1970) of northern Lake Michigan but these relationships appear to reflect shared adoptions of diffusing pottery traits from the east rather than necessarily reflecting close cultural contacts. A few possible Late Western Shield culture pottery sherds recovered from North Bay culture sites in the Green Bay area of western Lake Michigan (Mason 1981: Plate 7.24, 284) may be indicative of intermarriage. For the most part, the relationship between Late Western Shield culture and the North Bay and Summer Island cultures appears to be equivalent to the relationship in the west with the Malmo culture of central Minnesota. The significant external relationships of Late Western Shield culture occur along an east-west axis, namely with Late Great Lakes-St.Lawrence culture to the east and with Late Plains culture to the west.

Occurrences of Late Great Lakes-St.Lawrence culture pottery on the Late Western Shield culture Heron Bay (Wright 1967) and Frank Bay (Ridley 1954) sites and reciprocal Late Western Shield culture pottery on the Saugeen complex Donaldson site (Wright and Anderson 1963) suggest intermarriage between bands of the two cultures. Such a social network, bonded by blood relations, would have abet the exchange of goods such as native copper and perishables. The relationship represents a continuation of that of the preceding Middle Great Lakes-St.Lawrence and Middle Shield cultures. Correspondences between many Late Western Shield culture and Late Great Lakes-St.Lawrence culture (Saugeen and Point Peninsula complexes) pottery attributes makes culture or complex identification of 'exotic' pottery somewhat difficult to detect and thus the extent of female mobility between the two cultures is undoubtedly underemphasized or, more accurately, unrecognized in the archaeological record. It will be recalled that pottery is believed to have been manufactured by women. The difficulty in determining a boundary between Late Western Shield and Late Great Lakes-St.Lawrence cultures is, in part, due to the mixing of cultural deposits at most sites and incomplete analyses. Blurring any sharp cultural boundary was the apparent degree of cultural interplay between two cultures that shared an extensive frontier. At the DaGv-1 site on Larder Lake, between Lake Abitibi and Lake Timiscaming at the height of land separating the Hudson Bay and St.Lawrence drainages, the pottery most closely resembles Point Peninsula styles but the stone tool assemblage is more like Late Western Shield culture (Noble 1982: 41-42). Late Western Shield culture from Manitoulin Island, along the French and Mattawa rivers to the Ottawa River and north to the Lake Abitibi region is "...strongly influenced by Point Peninsula..." (Pollock 1975: 15) not only in the form of the pottery but also in the presence of polished stone tools such as celts, birdstones and gorgets, traits that are generally absent from Late Western Shield culture sites. Some of these items are even found as far west as Lake Nipigon (Dawson 1976a). Lower Great Lakes cherts, such as Onondaga chert, are also common on the easternmost Late Western Shield culture sites. Given the apparent strength of relationships of Late Western Shield culture with its eastern neighbour, it would follow that much of the native copper and exotic chert, such as Hudson Bay Lowlands nodular chert, possibly greenstone for celt manufacture, and banded slate for gorgets and birdstones, entered the lower Great Lakes and upper St.Lawrence River region through trading relationships with Late Western Shield culture. Blood ties, established by intermarriages, would be an obvious stabilizing factor in any such broadly based trade network.

To the west, there was considerable Late Western Shield culture contact with Late Plains culture. This is not surprising considering that Late Western Shield culture territories in southwestern Northern Ontario and southeastern Manitoba represented former Plains culture hunting territories. Plains people abandoned the territory due to changing climatic conditions (Buchner 1979:114; MacNeish 1958: 78; Reeves 1970: 168) that resulted in a westward contraction of the Parklands with their wintering bison herds. The earlier Late Plains culture occupation was by the Larter complex, a Manitoba archaeological designation that appeared late in Period III and is known on the Plains as the Pelican Lake complex. More directly pertinent is the apparent Late Western Shield culture penetration into the fringes of the Parklands, suggesting that the area had already been either abandoned by Late Plains culture hunters or was exploited at different times of the year by the two groups. Curiously, while Late Western Shield culture pottery has been stated to be present on Late Plains culture sites in North Dakota (Gregg 1987: 35) and southern Manitoba (Joyes 1970: 213; MacNeish and Capes 1958; Syms 1977: 82) there is no pottery evidence, to date, of reciprocity from Late Plains culture. It is quite possible, however, that the simple plain and cord impressed Late Plains culture (Besant complex) pottery has simply not been recognized as such further east (e.g. Kenyon 1971: 80). This possibility is strengthened by the evidence from the Armstrong Mound on the Rainy River where Late Plains culture projectile point types (Kenyon 1971, Fig.6) suggest contacts. A number of the points were manufactured from Knife River chalcedony from a North Dakota geological deposit more than 500 km to the west. Relationships between Late Western Shield and Late Plains peoples are evident in the abundance of Knife River chalcedony on Late Western Shield sites at the juncture of Manitoba, Ontario, and Minnesota (Arthurs 1986: 119; Buchner 1979; Callaghan 1982: 19; MacNeish 1958) and indicates a well established trading system involving close connections with Late Plains culture (late Pelican Lake and Besant complexes) in southwestern Manitoba and North Dakota (Gregg 1987: 281; Reeves 1970: 164). Although not nearly as abundant, obsidian from Yellowstone, Wyoming (Griffin et al. 1969) does occur on many Late Western Shield culture sites (Godfrey and Haywood 1984) reinforcing a Late Western Shield culture trade relationship with Late Plains culture. Both the North Dakota Knife River chalcedony and the Wyoming obsidian likely moved north out of North Dakota via the Red River to Lake Winnipeg and thence eastward along the Boundary Waters route to the northshore of Lake Superior. Such a proposal is supported by the association of Knife River chalcedony and Lake of the Woods cherts and rhyolites at the Long Sault site on the Rainy River (Arthurs 1986: 119). In terms of reciprocity, native copper appearing on sites such as Naze in North Dakota at AD 1 (Gregg 1987) is more likely indicative of trade with Late Western Shield culture than participation in the Hopewell Interaction Sphere. Once again, more intensive efforts to match exotic items to their geological (e.g. chert, quartzite, etc.) and biological (e.g. freshwater molluscs, etc.) origins would undoubtedly expand our view of relationships between the various cultures during this and other time periods.

Human biology:

Despite the excavation of a number of Late Western Shield (Laurel) culture burial mounds in the Boundary Waters area there is surprisingly little information on human biology. To the best of my knowledge, the skeletal materials from the Armstrong Mound have not been reported on other than to note that all four adults were "...seriously afflicted with arthritis" (Kenyon 1971: 72). Similarly, there does not appear to be any published physical anthropological information on the Arrowhead Drive site burials (Bettarel and Harrison 1962). The only other skeletal remains that can be definitely associated with Late Western Shield culture are the 39 individuals from Smith Mound 3 and Smith Mound 4 on the Rainy River in Minnesota but even here the remains were so fragmented that they could only be examined for 4 of 26 established discrete skull morphological traits (Ossenberg 1974: 19). Thus the multivariate estimate of biological distance used to assess biological affinities with other comparative samples is of questionable value as applied to Late Western Shield culture populations. The vast majority of the lands occupied by Late Western Shield culture from western Québec to east-central Saskatchewan are characterized by acid soils meaning that all uncarbonized bone has been dissolved. As a result, it will likely never be possible, even under exceptional circumstances of preservation, to determine the extent of biological diversity represented in the various bands that once composed Late Western Shield culture. Inferences on human biology will likely have to rely upon assumptions of cultural continuity into Period V and then downstream to Period IV from the later biological evidence.

Inferences on society:

It has been suggested that it is unrealistic to expect stylistic uniformity across the enormous span of the Canadian Shield from western Québec to east-central Saskatchewan because of "...the unstable resource base of the subarctic forest zone which necessitated an adaption based on small highly mobile agamous groupings who resided for only short periods in ecologically favourable zones for food extraction" (Dawson 1981: 36). Settlement pattern evidence, however, suggests that in at least the Great Lakes-St.Lawrence Forest and the southern regions of the Boreal Forest the seasonal spring to fall resources were quite stable and obviously sufficient to provide essential winter stores. While regional cultural variability is to be expected across this large and varied region, it will not be nearly of the same extent as apparent in more favourable climes to the south. Clearly reflected in the archaeological record is the same degree of mobility and wide ranging cultural sameness recorded historically across the Canadian Shield. A highly efficient form of water transport in an area characterized by an interconnected network of natural water highways, the impact of the endemic massive forest fires that temporarily displaced all life from large areas in an unpredictable fashion, the need to exploit large tracts of land for sustenance, and the establishment of a widespread kinship network based upon marriage to form a type of mutual life insurance as well as a device to enhance trade, all assured an unusually degree of cultural homogeneity (Wright 1981: 86). With reference to the latter point, trade was not likely limited to simple economic transactions but, rather, acted as the foundation of binding social relationships through gift exchanges. Instead of external population movements and amalgamation with local peoples being a significant factor in cultural change most archaeologically recognized changes appear to have been a product of diffusion within a network of blood related bands whose mobility was permitted by the bark canoe, the interconnected water networks, the necessity to move in response to circumstances such as forest fires and resource depletion or failure, and a material, social, and intellectual culture that was superbly adapted to the stringent requirements of survival in the forests of the Canadian Shield. It is probable that the extended family consisted of partrilineally related males and their families (Rogers 1972).

The only significant exception to the foregoing appears to be the large ceremonial and habitation sites in the Boundary Waters area and, in particular, at the major rapids of the Rainy River. Here an exceptionally rich wild rice and fish resource allowed larger than normal aggregations of people, a greater degree of sedentariness, and the participation in southern burial mound ceremonialism. As only a very small portion of the population was buried in the mounds, there appears that some form of social ranking was established, likely related to certain family lineages. If status, for example, had resided in clans, one would anticipate a far greater density of burial mounds and numbers of deceased buried in same. As has been noted, a similar status differentiation occurred in the Rice Lake area of Late Great Lakes-St.Lawrence culture. Many of the same factors, such as wild rice, rich aquatic resources, an exceptional population density, and participation in burial mound ceremonialism and associated trade networks, appear to have been involved in these aberrant developments of both cultures. It is speculated that, while Late Western Shield culture was essentially egalitarian, certain family lineages could have possessed proprietary rights to specific resource areas and still not have been in conflict with the general principle of an egalitarian system. With the development of the skills to process and store wild rice, however, those families with a traditional claim to the wild rice beds would have had a decided economic advantage over their neighbours. Surplus stored rice would have provided a basis for differential wealth and the ability to attract followers with gifts and feasting; all of this done within a framework of earlier proprietary rights and having absolutely nothing to do with social advancement through some form of socially unacceptable power seizure.

In the Boundary Waters region, the Ballynacree site, with its assumed contemporary three lodges and estimated 33 people (Reid and Rajnovich 1991), may pertain to three extended families (Rogers 1972) which along with the population of the Ballynasmore site 100 m away, would have constituted the local band. While it is probable that these two sites represented the seasonal base camp of a band it does not necessarily follow that the sacred gathering places for such a band would be at sites like the Long Sault site on the Rainy River to the east. Individual mobility between bands was likely assured by fluctuations in the carrying capacities of certain territories, the requirement for suitable marriage partners, and the unpredictable impact of forest fires. Unlike the rest of Late Western Shield culture, the occupants of the Boundary Waters region were able to maintain a relatively high population density and an unusual degree of sedentism based upon exploitation and storage of wild rice. The abnormally high frequencies of pottery vessels relative to chipped stone tools appears to be a direct technological reflection of a economic system based upon the harvesting and storage of wild rice. The rich sturgeon resource of the River was also likely an important factor. In short, deviations from the rest of the Late Western Shield culture pattern in the Boundary Waters region were the combination of a specialized reliance upon wild rice and involvement in an attenuated Hopewell mortuary complex. Key to the exceptional cultural developments in this region was location. At the time of Late Western Shield culture occupation of the Rainy River the vegetation province was Great Lakes-St.Lawrence Forest but it was in close proximity to the Deciduous Forest, Parkland, and Boreal Forest vegetation provinces (McAndrews et al. 1987: Plate 4) with all of their different resources and, to the south and west, different cultures.

Limitations in the evidence:

Limitations in the archaeological evidence are the same as those that plague many areas; inability to isolate components at the large summer base camps, archaeological invisibility of most winter camps, lack of bone preservation, and the difficulty of accurately associating radiocarbon samples with the intended cultural target. A methodological liability can be attributed to the over zealous use of pottery vessel characteristics in cultural reconstructions. Pottery, with its very precise attributes being exceptionally amenable to systematic analysis, has tempted archaeologists to apply sophisticated analytical and statistical methods of analysis, particularly with reference to motifs and techniques of applying motifs, despite the fact that the samples being so manipulated usually represent an unknown span of time involving an unknown number of components. Without control of the time factor the sophisticated analyses are essentially meaningless or, at the very best, produce results of limited utility in terms of temporal seriation and, to a somewhat lesser extent, cultural regionalism.

There have been problems with the use of radiocarbon dates involving a somewhat whimsical acceptance or rejection of certain dates. For example, despite dates ranging from AD 700 to AD 1700 from the same feature, and dates of AD 300 from level 2 and AD 1200 from the lower level 3 of the same excavation unit at the Kame Hills site in northern Manitoba (Dickson 1976: 10-11, 30), the earlier dates, in both instances, were accepted as dating the Late Western Shield occupation. This has obviously been done on the basis of the anticipated correct age despite obvious problems of contamination of the radiocarbon samples. Or at the Heron Bay site on the northshore of Lake Superior, with its relatively homogeneous assemblage isolated from earlier and later cultural mixture by isostatic rebound, the spread of the five radiocarbon dates was AD 200 to AD 750 (Wright 1967). Radiocarbon samples from the same deposit in the same small test pit at the Ouimet site on Lake Attiwapiskat provided AD 300 and AD 1000 readings (Wilmeth 1978: 131). Such date ranges from the same features or deposits and inverted stratigraphic readings suggest serious problems with contamination (e.g humic acid and/or forest fires). Despite this prevalent problem in the Canadian Shield, radiocarbon dates have been used to establish the chronology of Late Western Shield culture history. This has been done even when such reconstructions contradict the stratigraphic evidence of cultural succession.

Attempts to isolate components in the typically thin and mixed deposits of sites by using preconceived cultural index fossils, mainly pottery styles, and then compounding matters by treating the pottery assemblage as the product of a single component for purposes of comparison and seriation (Rajnovich et al. 1982; Reid and Rajnovich 1991; Stoltman 1973) is unacceptable. Further, the application of double-link close proximity analysis to such samples is meaningless as there is no control of the time factor involved in the comparative units. Archaeological deposits in the Boreal Forest and adjacent regions have been described as 'collapsed stratigraphy' (Syms 1977) or 'compressed stratigraphy' (Reid 1988). As descriptions of the mixed cultural debris of these multi-component sites both terms are misleading. A site either has recognizable stratigraphic layering or it does not. The term 'stratigraphy' as applied in archaeology comes from geology where it refers to layered rocks or sediments and assumes that the lowest layers are the oldest (the law of superposition), the layers are generally horizontal (the law of horizontality), and the layers are continuous, pinching out along the margins of the depositional basin (the law of original continuity) (Newman 1967: 1139). Most northern sites are not stratified and never were. They consist of thin veneers of debris, usually discontinuous, which have been subjected to extensive disturbance by bioturbation (insects and rodent digging, tree-falls, human activities) and cryoturbation (frost action). A more accurate description of the archaeological deposits of such sites would be 'semi-superpositional deposits' where sequential occupations are only superimposed in the sense that most of the beer bottle caps are in the upper levels and most of the Archaic projectile points are in the lower levels but that discrete cultural levels or quasi-components cannot be isolated. This fact of life regarding the nature of archaeological deposits in the region can only be partially ameliorated by rigorous excavation techniques (Reid 1988). Local natural phenomenon, such as site isolation by isostatic rebound along the northshore of Lake Superior and the rare instances of stratification by sedimentation processes, are ultimately of greater importance for arriving at rough approximations of components than refined field excavation methods. While it is agreed that, in most instances, "Materials from Manitoba come from sites with collapsed stratigraphy and are useless for comparative purposes..." (Syms 1977: 81) the observation, of course, has a wider application. Forcing mixed archaeological deposits into pseudo components has led to a number of erroneous assertions. Lack of control of the time dimension at such sites means that one dimensional data (space) cannot be used to arrive at two dimensional conclusions (space and time).

A final problem, and one that affects all broad culture constructs, is that Late Western Shield culture has been viewed from western, eastern, and southern perspectives resulting in various regional typologies and a host of different names for similar artifact forms. In the opposite extreme, superficially similar traits have been given excessive importance in reconstructing culture history. With reference to the latter problem, for example, some very general pottery attributes of low frequency have been used to relate the Summer Island and Rock Island sites in northern Michigan and Wisconsin to Late Western Shield (Laurel) culture (Mason 1991). This relationship is then used to treat Late Western Shield culture as an equivalent of such regional constructs as North Bay, Summer Island, Saugeen, etc. It is further suggested that all of these groups shared common Archaic ancestral roots and had to adapt to a similar environment (Ibid: 139). In this particular instance, the focus has not only been geographically restricted but has concentrated on a limited number of pottery traits ignoring the fact that the Late Western Shield culture chipped stone tool assemblage is not only more diagnostic of the culture than the pottery but is demonstrably different from that of the other upper Great Lakes cultures with which it is lumped. A quick comparison of the none pottery technology of the Rock Island site in Wisconsin (Mason 1991: Table 3) and the Heron Bay site in Ontario (Wright 1967: 26-35) reveals striking quantitative and stylistic differences. It is also inappropriate to suggest that the environmental constraints placed on North Bay culture even approached the scope of those faced by a Late Western Shield culture that occupied vegetation provinces ranging from Lichen Woodland to Parkland.

CHAPTER 26

LATE PLAINS CULTURE

Précis:

Late Plains culture, composed of the chronologically sequential Pelican Lake and Besant complexes, occupied a core area consisting of Alberta and Saskatchewan south of the North Saskatchewan River, southern Manitoba, most of Montana and North Dakota, and portions of adjacent Wyoming, South Dakota and Ontario. Departing from the current practice on the Plains, where the Pelican Lake complex and sometimes the Besant complex are placed in a 'Middle Period', the two complexes are assigned to Late Plains culture. Period V from AD 500 to European contact is generally referred to as Late Plains, for example, but in this work becomes simply Plains culture. Such nomenclature changes can cause understandable confusion but are unavoidable given the national scope of the present work. The Pelican Lake complex is more widely distributed than the Besant complex but as this distribution is mainly based on a loosely defined projectile point variety what the distribution actually means in cultural terms is a problem. A more restricted distribution of the Besant complex centres on the southern Prairie provinces and adjacent Montana and North Dakota (Walde et al. 1995: Figure 2). Vegetation provinces occupied by Late Plains culture were mainly the Grassland and the Parkland but, in the case of the Pelican Lake complex, also included marginal portions of the Great Lakes-St.Lawrence and Boreal Forest to the east and the Columbia-Montane Forest to the west (McAndrews et al. 1987: Plate 4).

As was the case with the cultural origins and descendants of Middle Plains culture in Period III, a controversy exists relative to the origin(s) of Late Plains culture. A commonly held view holds that two archaeological traditions, called Napikwan and Tunaxa, gave rise to different cultures who co-inhabited the Northern Plains (Reeves 1970; 1983). A modification on the foregoing would have the Pelican Lake complex replace the McKean complex (Hanna) of Period III and share the Plains with the Besant complex in Period IV only to be eventually replaced itself (Dyck and Morlan: in press). The scenario favoured here, like the one applied to Middle Plains culture, is that a single cultural tradition and not two different traditions was involved. This, in part, is suggested by the stratigraphic record and the evidence from single components where late Pelican Lake projectile points are found in direct association with early Besant style points (e.g. Dyck and Morlan 1995; VanDyke and Head 1983). It has been recently observed that "...we are beginning to question even more strongly the idea that an archaeological complex, much less the looser series grouping, can be defined by a single point type" (Dyck and Morlan 1995: 405). Other aspects of Late Plains culture systems, such as subsistence and settlement patterns, also exhibit clear continuities between the Pelican Lake and Besant complexes. Such evidence favours the likelihood of a single developing cultural tradition. Arguments for the contemporaneity of the Pelican Lake and Besant complexes, exclusive of the transition of the former into the latter, are seen as a product of the time ranges inherent in the radiocarbon method compounded by instances of poor sample context and contamination (Morlan 1988; Morlan et al. 1996). In the scheme favoured here, the Pelican Lake complex is equated with the first part of Late Plains culture with the Besant complex developing directly out of the former. Similarly, the Avonlea complex of Period V is considered a development out of Late Plains culture (Besant). In this respect, Late Plains culture is regarded as an in place development of a single cultural tradition with its ancestry rooted in the Middle Plains culture of Period III and its descendants represented by the Plains culture of Period V. Numerous stratified sites, such as Walter Felt (Kehoe 1974), Long Creek (Wettlaufer and Mayer-Oakes 1960), Old Women's Buffalo Jump (Forbis 1962), Head-Smashed-In Buffalo Jump (Reeves 1978a; 1983), Garratt (Morgan 1979), and Sjovold (Dyck and Morlan 1995), suggest a cultural sequence involving a single tradition. It is important to note, however, that what is here referred to as Late Plains culture, like all of the other cultural constructs proposed in these volumes, would have been composed of numerous independent bands whose relationship to one another would have been increasingly attenuated with distance.

Bison was the single most important food animal of Late Plains culture peoples, as it was throughout the 12,000 years of Plains pre-European history. There were, however, significant seasonal and regional variations in the subsistence pattern. Adaptive flexibility is not only a prerequisite for hunters but is particularly so when a number of different vegetation provinces were occupied. These included Grassland, Parkland, the Foothills of the Rocky Mountains, the margins of the Boreal Forest and, at the beginning of Period IV, the Great Lakes-St.Lawrence Forest. Such vegetation provinces, characterized by distinctive plant assemblages, were not in a static relationship to one another. For example, cooler and wetter summers similar to today allowed the forests to encroach on the parklands and grasslands, a process that only stabilized around 650 BC. Pronghorn, white-tailed and mule deer, elk, sheep, mountain goat, beaver, small game, fish, and roots and berries would vary in importance relative to both vegetation province and season. Meat would have accounted for the bulk of the calories ingested by Plains people but humans are unable to effectively metabolize Vitamin C from meat.

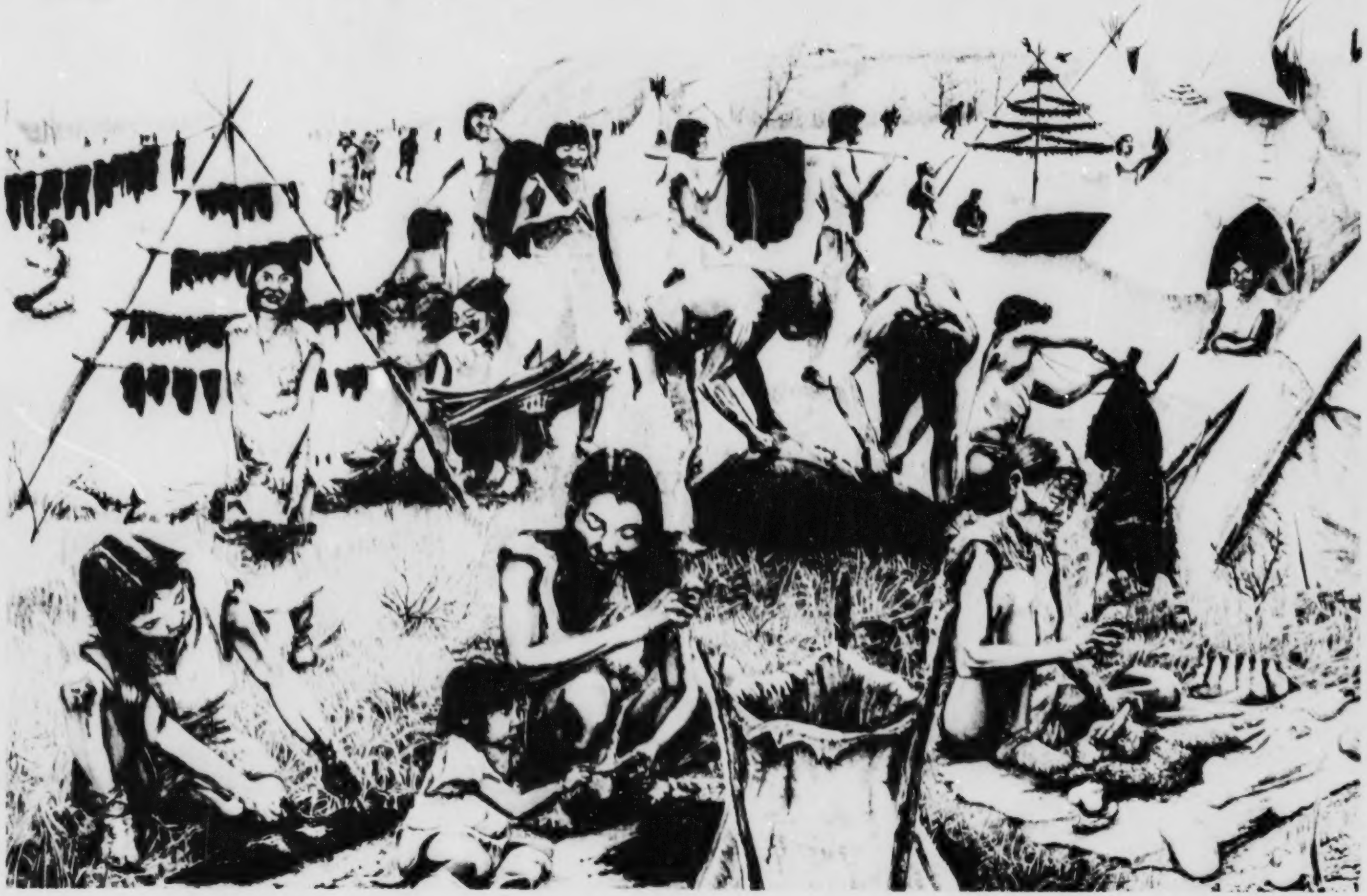
Vitamin C or ascorbic acid is an essential element of nutrition that could only be provided in significant quantities by plants. Various dried berries or tubers like bitterroot and wild parsley were likely the major sources of this essential vitamin (Aaberg 1983). Throughout Period IV evidence in the form of boiling pits, hearths, mounds of fire fractured rock, and bone mash indicate the increasing importance of pemmican (Reeves 1990). Pemmican was produced by pounding dried bison meat, mixing it with fat rendered from bones and marrow, and packing it into large bison bladder sacks. Although the production of pemmican was a labour intensive activity, it did provide a preserved food supply for winter sustenance as well as a hedge against hunting failures. It would also have served as dog food and dogs were the draft animals which permitted mobility, an essential aspect of survival on the Plains.

Projectile point types have been used as the major device to reconstruct Northern Plains culture history and, in this regard, have been both a blessing and a curse. All 'types', whether pertaining to projectile points, pottery vessels, or other artifact categories, are abstractions subject to the limitations inherent in both the classifications and the precision of the classifiers and, as such, possess elements of both compartmental simplicity and personal subjectivity. As a result, there is often a lack of agreement with one persons' Pelican Lake point being anothers' Besant point; particularly as point style trends are generally continuous and grade into one another. Since much of archaeological interpretation is based upon surface collected materials or is excavated from sites with mixed cultural deposits, types can play an important role as culture and time indicators. The uncritical use of typology and unsystematic classifications, however, are capable of producing cultural reconstructions that have little basis in fact. While most archaeologists recognize the dangers inherent in basing cultures upon point types such cultures still characterize much of Plains culture history. The situation has been further exacerbated by a tendency to rely upon projectile point types alone for site placement in time and cultural assignment. Such a procedure often ignores or minimizes the remainder of the technology and the other systems of the culture under consideration like settlement patterns and cosmology. The Pelican Lake complex, for example, is largely based upon a wide range of corner-notched projectile points; a weak crutch to rest either a culture or a complex upon. Projectile points are undoubtedly the most important single artifact category within Late Plains culture but it is held that they should still be viewed as only one element in a tool kit that itself is only part of an archaeologically defined culture. Projectile point style trends during Period IV involve a wide range of corner-notched dartheads early in the sequence which develop into broad side-notched forms. Although it is a matter of debate, it is suggested here that the adoption of the bow and arrow weapon system took place during Period IV. Likely adopted from Late Western Shield culture people to the east or their immediate ancestors, the bow is estimated to have appeared on the Plains around 500 BC. With the exception of projectile points, stylistically diagnostic tools are rare, such as the notched biface and uniface knife forms in the Pelican Lake complex (Davis 1975) and the preference at the same time for dorsally retouched end scrapers. A continuity of the tool kit assemblage in Late Plains culture and the scarcity of significant differences between the Pelican Lake and Besant complexes supports the view of a single developing technological tradition.

The earliest evidence of the bow and arrow on the Plains indicates that it was used along with the spearthrower weapon system. Many of the arrow points were manufactured from the distinctive Knife River chert of North Dakota. An initial appearance of the bow and arrow involving arrowheads manufactured from a specific type of stone was a pattern repeated further east with Late Great Lakes-St.Lawrence culture (Onondaga chert) and Late Western Shield culture (Hudson Bay Lowlands nodular chert) and even occurred west of the Plains in the Canadian Plateau and the southern coast of British Columbia (vitreous basalt). It is estimated that the bow and arrow was first introduced to the Plains around 500 BC. Some archaeologists would argue for a much earlier appearance of around 2,000 BC (Dyck and Morlan 1995: Tables 3.5 and 26.1). The problem is that distinguishing arrowheads from dartheads is not a simple matter. While metrical evidence can be used to demonstrate the impossibility of hafting certain points to a wooden arrowshaft, certain small and thin points could have been used as either darts or arrows (see Figure 73 for criterion used to separate the majority of darts from arrows). Metrical evidence has not been solely relied upon to identify the presence of the bow but rather a series of associated phenomenon. These include the frequent initial association of arrowheads with a distinctive stone type, the abrupt change in projectile point metrical characteristics that permitted hafting of stone points in wooden arrowshafts, a rather lengthy period of association between dartheads and arrowheads, and the timing of these events relative to the east to west cline of the inferred diffusion route of the bow and arrow. It has been necessary to discuss projectile point typology as well as the introduction of the bow and arrow at the beginning of this Chapter as more than anywhere else in Canada projectile point styles have been used to establish the culture history. Archaeological reconstructions of Plains pre-European history are therefore subject to both the strengths and the limitations of projectile point stylistic trends and their relevance to what actually took place in the past.

The adaptability of Late Plains culture subsistence is reflected in the Pelican Lake complex occupation of the Long Sault site on the Rainy River in Ontario where moose, beaver, sturgeon, pickerel, and suckers represented the major food remains (Arthurs 1986). Harpooning large sturgeon from a bark canoe hardly fits the image of a Plains culture hunter but adaptability was the basis of survival for all hunting people and simple subsistence stereotypes rarely stand up to close scrutiny. The extent of seasonal mobility of hunting bands is also a difficult issue for archaeology to address. For example, the Pelican Lake people who occupied the Rainy River could have been mainly bison hunters who made seasonal forays eastward to harvest the oil-rich sturgeon and other resources as well as to trade. Given the proximity of the grasslands and parklands and the mobility and portability provided by watercraft, an eastward exploitation range of Late Plains culture into Ontario is not surprising, particularly given a long history of exploiting similar resource areas in adjacent southeastern Manitoba (Buchner 1979; 1982; 1982a). Identification of the Pelican Lake complex at the Long Sault site is based on the similarity of the tool kit to Pelican Lake complex sites in adjacent southeastern Manitoba (Buchner 1979: 42-45) and its dissimilarity to the late Middle Shield culture tool kit (Wright 1972; 1995), as well as other lines of evidence. Despite the foregoing qualification, there can be no denying that the increasing importance of communal bison hunting techniques is the single most striking characteristic of Late Plains culture. The increase in mass bison kills, beginning with the Pelican Lake complex, has been attributed to an increase in bison populations (Dyck and Morlan: in press). The impression that Pelican Lake complex campsites are more numerous than their predecessors, however, probably reflects the weakly defined nature of the complex where almost any corner-notched projectile point qualifies for the cultural assignment. Increased archaeological visibility of mass bison kills and the destruction and burying of a more dispersed earlier archaeological record are also factors that could lead to an erroneous impression of a significant population increase at the beginning of Period IV. In this respect, the speculation that improvement in methods of communal hunting and pemmican production provided an economic base for increased social complexity and elaboration of cultural systems (Reeves 1990) would not appear to be entirely justified. There was some coalescence of people during Period IV but insufficient to suggest an early establishment of the full-blown historically documented social system of the Northern Plains. The latter included very large aggregations of people, representative of a number of bands, during the communal bison hunt. Self discipline in the name of the common good was essential during the complex process of manoeuvring bison herds into entrapment situations. Policing of individual behaviour therefore became essential. Other historically documented social systems were the existence of status differences in the form of personal wealth and polygamy. Processes leading to the historically documented pattern, however, were undoubtedly incremental rather than abrupt. Major cultural disruptions caused by the introduction of the horse, the gun, and European diseases and trade to traditional behaviour must also be considered when extrapolating from European documentation to pre-European events.

Given the extent of Late Plains culture, it is not surprising that there is an uneven distribution of certain cultural traits. For example, pottery vessels are more common on easterly sites that were closer to the eastern centres of pottery diffusion. The same



COLOUR PLATE XVII: A LATE PLAINS CULTURE FALL CAMP SCENE Following the successful entrapment and killing of a herd of bison cows and their calves at a pound or jump site at the foot of the hill in the background, men help the women butcher and dry the meat before spoilage sets in. Water in the bison paunch container in the foreground will be heated with hot rocks in order to render fat for pemmican production from broken bones along with the marrow being extracted by the elderly woman. The attentive dog with an injured foot has been tethered to a tipi by its owner to keep it away from the kill site where there would be danger of further injury from the other dogs gorging themselves on the remains of the hunt. A young boy in the upper right chases a thieving magpie away from the drying meat. The scene is set in the Parklands in the fall when the need to amass winter stores would have been critical and the bison in prime condition. (Painting produced by Vidéoanthrop Inc., Montréal by M. François Girard using sketches and technical information compiled by M. Marc Laberge and the author; the original colour version is provided on CD-ROM)

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situation applies to the occurrence of Besant complex burial mounds that are restricted to South Dakota and North Dakota. Variability in the lands occupied by Late Plains culture also assured that the settlement patterns were equally variable. While stereotype settlements are represented by sites like Head-Smashed-In (Reeves 1978a) or Old Women's (Forbis 1962) buffalo jumps such sites are actually rare. Nearly as archaeologically visible as the foregoing impressive 'jump' sites are other communal 'kill' sites where numbers of bison were dispatched in pounds, surrounds, and in natural entrapment features such as kettles and river and lake margins. The generally excellent bone preservation on the Plains insures that such sites, with their masses of bison bone, are readily recognizable. Not nearly so apparent are the buried tent rings and small campsites that would have been involved in a host of activities such as lodge pole gathering, and berry and root harvesting. Stone tent rings are certainly the most common dwelling evidence. By 1,000 BC large winter camps with different sized tipi ring are present. Some specialized sites could attain exceptional dimensions and possess substantial time depth. The Schmitt quarry and associated camp site in Montana (Davis 1987; Leslie B. Davis, Montana State University: personal communication and examination), for example, covered more than 100 hectares and was occupied intermittently for 1,000 years.

Another characteristic of Late Plains culture is the relatively high frequency of exotic items. Early in Period IV, Wyoming obsidian and Montana cherts are common, particularly on the more westerly sites. Knife River Flint from North Dakota is particularly frequent in the Besant complex. Other exotic materials are represented by *Olivella* and *Dentalium* shell beads from the Pacific Coast and even one incidence of a

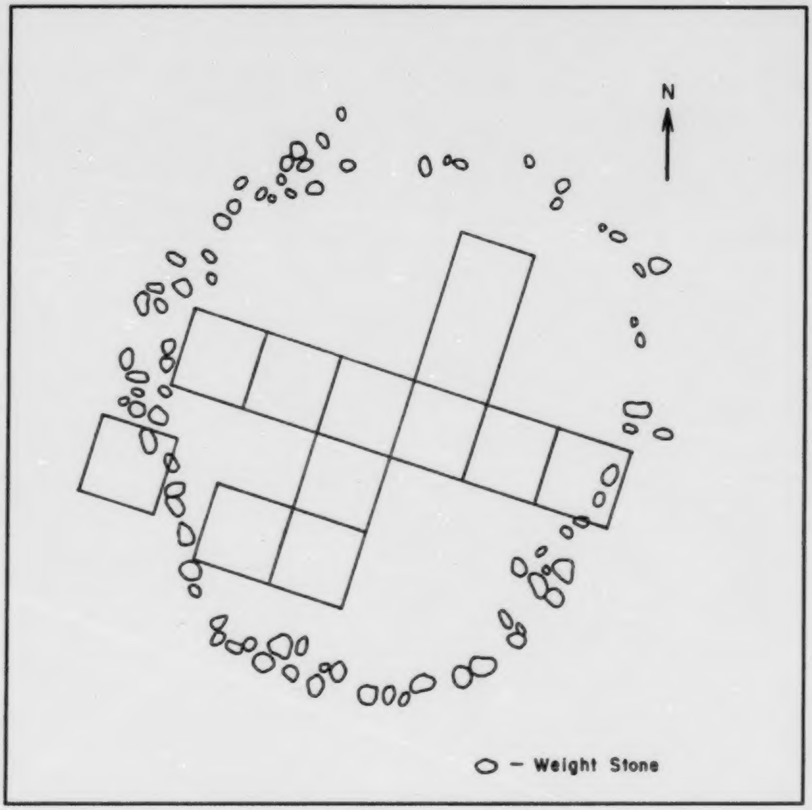

FIGURE 79: A BESANT COMPLEX TIPI RING The tipi outline is indicated by the stone weights that would have held the lower edges of the bison hide tent covering in place. Indicated archaeological excavation units failed to reveal a central hearth perhaps suggesting a warm weather occupation when most household activities would have been carried on outside of the tent. In contrast, tipi rings believed to represent winter occupations have central hearths and cultural debris concentrated within the confines of the dwellings. (Adapted from Finnigan 1982: 185. Drawing by Mr. David W. Laverie)

British Columbia Fraser Canyon jadeite adze. The rare native copper items have been attributed to the Lake Superior region.

Relatively little is known of Late Plains culture cosmology. There is evidence at the rock art site of Writing-On-Stone in southern Alberta that these people were the first to use the site as a sacred place where a shaman or an individual with spiritual power could solicit supernatural powers (Brink 1978). There is also evidence of Late Plains culture participation in the medicine wheel ceremonialism which began in Middle Plains culture times (Calder 1977). An aspect of Late Plains culture cosmology, the significance of which for the culture as a whole has been overemphasized, was the appearance of burial mound ceremonialism in South Dakota and North Dakota (Neuman 1975). Even though the influences responsible for the burial mounds stemmed from Hopewell culture to the east many of the mound features were of local origin. Burial mounds were not adopted by the majority of Late Plains culture people and the features are best viewed as a restricted middle Missouri River drainage phenomena. Further to the west and north into southern Alberta and Saskatchewan two burial pits containing multiple bundle burials were provided with red ochre and a rich assortment of offerings. The offerings included exotic items such as marine shell beads and native copper. In one instance, a grave was covered by a cobble cairn (Brink and Baldwin 1988; Walker 1982). Both of the foregoing burials pertain to the early portion of Late Plains culture and suggest corpse exposure on scaffolds preceded interment. Indeed, the scarcity of burials and their absence from the later portion of Late Plains culture, with the exception of the eastern burial mounds, indicate that the historically documented practices of leaving bodies on scaffolds, in abandoned tipis, or otherwise exposed to the elements, was already the common manner of treating the remains of the deceased.

There has been an excessive emphasis on the impact of Hopewell culture on the late portion of Late Plains culture. According to the hypothesis of an occupation of the Northern Plains by two contemporaneous but different cultures, the Besant complex expanded into the Plains from the east at the expense of the local Pelican Lake complex. The explanation for this westward spread was the Besant complex's participation in the Hopewellian Interaction Sphere and the need to assert economic control over certain valuable resources such as the Yellowstone obsidian in Wyoming, Knife River Flint in North Dakota, and bison products (Reeves 1970: 173). Economic driven imperialism is an inappropriate device for explaining relationships between hunting societies. There is only limited evidence of an exchange network with the Hopewell communities to the east. On the contrary, there is more evidence of Late Plains culture trade involvement with the Rocky Mountains and the Pacific coast than with what is now the midwestern United States. Plains items that do occur in the midwest, such as obsidian and Knife River Flint, simply reflect a continuation of trading patterns that were already well established in Period III. Of course, probable eastward trade in perishables such as bison robes and shields is impossible to demonstrate. Regardless of the equivocal nature of the evidence, it is still generally accepted by Plains archaeologists that the Besant complex resulted from the fusion of the preceding Pelican Lake complex and eastern Woodland influences (Dyck 1983; Kehoe and Kehoe 1968; Reeves 1983).

A poorly understood relationship existed between Late Plains culture and the Late Western Shield culture (Laurel) of the Canadian Shield and environs. Pelican Lake complex people, generally referred to as the Larter complex or phase in Manitoba, once occupied large portions of southwestern Northern Ontario, southeastern Manitoba and northern Minnesota but abandoned the region due to a climatically induced westward retreat of the Grassland with its associated bison herds. The abandoned territory was eventually reoccupied by westward expanding Late Western Shield culture people who would even spread as far west as the Parklands. As both cultures occupied the same sites in southeastern Manitoba, the expansion into this region suggests there was probably some push involved rather than being simply a matter of one group occupying the abandoned territory of another. Late Western Shield culture bands of the Rainy River region possessed a relatively complex social organization and in this respect differed from the simple band level organization typical of their kinsmen to the east, north, and northwest. The enhanced social complexity and greater population densities of the Rainy River region appears to have been based upon the harvesting and storage of wild rice. As southeastern Manitoba was rich in wild rice beds this fact could have been an important incentive for forest dwellers to push further west.

Knife River Flint from North Dakota, also called chalcedony or chert, is commonly reported from Late Western Shield culture sites in the Rainy River region and Late Plains culture artifacts, such as projectile points and probably pottery (Kenyon 1971), are also present. What Late Plains culture people received in return is not particularly evident in the archaeological record and may have involved perishable substances such as parched wild rice and furs. Certainly the minor amounts of copper would have been of eastern origin. Late Western Shield (Laurel) culture pottery has been identified on Late Plains culture sites (Klimko 1985; MacNeish and Capes 1958; Meyer 1983a) but the plain bossed and coil constructed vessels involved are here regarded as a local Late Plains culture pottery style.

On the western flank of the Northern Plains there is no clear evidence of a Late Plains culture relationship with Late Plateau culture people of the Canadian Plateau nor into the Foothills of the Rocky Mountains north of the headwaters of the Athabasca River. Obsidian from the interior of British Columbia is present, as are occasional artifacts characteristic of Plateau cultures, but generally such items are not recovered from datable contexts. Some form of relationship must have existed as indicated by the presence of marine shell beads from the Pacific coast on Late Plains culture sites but the extent of the trade is poorly known.

Evidence pertaining to human biology is limited to the burial mounds of South Dakota and North Dakota (Bass and Phenice 1975) and from the single burial features from Saskatchewan and Alberta (Brink and Baldwin 1988; Walker 1982). This evidence suggests Late Plains culture people were relatively tall with well developed musculature but suffered from such ailments as arthritis, periostitis, mastoiditis and even possible instances of tertiary and cardiovascular syphilis. Dental health was generally excellent until after 30 years of age when excessive tooth wear resulted in periodontal disease and abscesses with subsequent tooth loss. Since inhumation was a waning cultural practice early in Late Plains culture history the evidence required to understand genetically determined population relationships and pathology is likely to remain limited.

Using archaeological evidence to draw inferences on society is always a risky procedure, fraught with the dangers of creating undemonstrable scenarios. As all aspects of life, then and now, possess an element of probability, however, speculation concerning the most likely ways that past societies organized themselves is a valid area of archaeological inquiry. During Late Plains culture times, cultural elements that had appeared in the preceding Period III, such as communal bison hunting and pemmican production, were elaborated and would eventually form the foundation of the cultural systems recorded by Europeans in the 18th and 19th centuries of our era. The ascendency of the bow and arrow over the spearthrower represents a technological trend that had potential consequences for the practice of warfare and thus social relations. During Period IV, the systems associated with an increasing reliance on communal bison hunting were already well in place. These included the possible formation of multi-band or tribal gatherings of large numbers of people, as well as dogs, that would have required some form of policing during critical periods during the hunt. Expanded pemmican production would also have provided the economic foundation for increasing social complexity including possible personal status and wealth differentiation.

Cultural origins and descendants:

As was the case with its Middle Plains culture predecessor there are conflicting views regarding the origins and descendants of Late Plains culture. A prevailing view holds that the Northern Plains was occupied at the same time during Period IV by two different archaeological traditions; the Napikwan tradition and the Tunaxa tradition (Reeves 1970; 1983). Both traditions are composed of a number of complexes or phases based primarily upon projectile point types from southern Alberta, Saskatchewan, Manitoba, Wyoming, Montana, North Dakota and South Dakota, Nebraska, northwestern Minnesota and parts of adjacent Ontario. In opposition to this scenario is the view that the Northern Plains was occupied by a single developing tradition. As viewed here, the occupation of the Northern Plains by two contemporary and unrelated cultural traditions is based upon too literal an interpretation of radiocarbon dates, too great a reliance upon projectile point types and assumptions of typological discreteness, and, when initially proposed, too great an emphasis upon the impact of eastern Hopewell influences on the Northern Plains. The suggestion that Late Plains culture is the product of a single developing tradition, founded in the Middle Plains culture of Period III, is supported by both the stratigraphic evidence of the Besant complex following the Pelican Lake complex with an intermediate transitional phase, the nature of the assemblages from isolated single component sites, the essentially similar nature of the culture systems (technology, settlement patterns, cosmology, subsistence, etc.) of the two supposed separate traditions, and the unlikely phenomena of two hunting cultures sharing the same hunting territories for centuries while in competition for the same resources and not leaving a clearer archaeological record of the fact. In lieu of any apparent technological advantage, an additional anthropological unlikelihood is for hunting cultures to possess either the economic base or social organization, such as the ability to establish confederacies composed of a number bands for the purpose of military action, to eradicate one another for economic or territorial gain. While aware that the foregoing position runs counter to historical documentation from the Plains, it is suggested that the situation with the Blackfeet, Cree, Assiniboine, Atsina, and Crow observed by Europeans was a recent cultural abberation resulting from the introduction of the horse, the gun, the European inspired fur trade, and European diseases. Evidence from stratified sites, such as Walter Felt (Kehoe 1974), Long Creek (Wettlaufer and Mayer-Oakes 1960), Old Women's Buffalo Jump (Forbis 1962), Head-Smashed-In Buffalo Jump (Reeves 1978a; 1983), H.M.S. Balzac (Head 1985), Garratt (Morgan 1979), and Sjovold (Dyck and Morlan 1995), suggests to this writer a single developmental sequence rather than two coeval traditions competing for the same resources in the same territories. When allowance is made for the problems of poor archaeological contexts and sample contamination, the majority of the radiocarbon dates can also be best interpreted as pertaining to a single cultural development. The proposition that one of the two hypothesized distinct cultures (Besant) intruded itself from the east onto the Plains and eventually absorbed the earlier local culture (Pelican Lake) is weakened by the normal distributions of the radiocarbon dates for the two complexes which are primarily superpositional rather than juxtaposed.

Projectile points are a common artifact on the Plains and it is only natural, given the frequent time and space sensitivity of their attributes, that their role in reconstructing cultural history should be emphasized. Unfortunately projectile point types, as with other tool types, frequently possess descriptively 'fuzzy' aspects that can often lead to misclassifications. Too frequently point types are used as convenient 'index fossils' with locked-in or prepackaged temporal and cultural meaning which can be easily misapplied. Although a laudable effort was made to provide a broad comparative base during the original proposal of the dual occupation hypothesis (Reeves 1970; 1983) the two culture constructs, named Pelican Lake and Besant after their initial definition at sites in southern Saskatchewan (Wettlaufer 1955; Wettlaufer and Mayer-Oakes 1960), have been primarily identified by their 'diagnostic' projectile point styles. These point styles, corner-notched early and side-notched late and their associated attributes, however, are not as mutually discrete as some might wish. At the stratified Naze site in North Dakota, for example, a side-notched Besant type point was found in 600 BC deposits containing the corner-notched Pelican Lake type point while the occasional Pelican Lake point was found in the subsequent AD 1 Besant stratum of the same site (Gregg 1987). Associations of the two point types occur at other sites such as Sjovold (Dyck and Morlan 1995), Old Women's Buffalo Jump (Forbis 1962), Walter Felt (Kehoe 1974), Head-Smashed-In Buffalo Jump (Reeves 1983), Bow Bottom (VanDyke and Head 1983), Cranford (Stuart 1990), and even Mortlach (Wettlaufer 1955) if the Sandy Creek points are interpreted as an early Besant variety. These associations suggest that the two point types are not diagnostic of distinctly different cultures but rather reflect progressive projectile point attribute changes through time within a single developing point tradition. As early and late aspects of Late Plains culture, however, there is utility in retaining the terms Pelican Lake and Besant as temporal segments of a single development albeit with a lengthy transition between the two point styles. The foregoing does not imply that the components making up Late Plains culture spoke a common language, which would be most unlikely, but that they shared archaeologically identifiable cultural systems such as technology, settlement patterns, cosmology, etc. Ethnic identity at this point in time and space would be futile, if not inappropriate.

The proposed relationship between the Besant point type to certain contemporary eastern Middle Woodland point forms is seriously flawed and does not warrant the statement that these points "...constitute a Saskatchewan phase of the Middle Woodland tradition" (Kehoe and Kehoe 1968: 28). In fact, the use of the regionally vague but culturally loaded classification unit 'Woodland' is rife with problems (Michlovic 1986: 216). For one thing, Early and Middle Woodland projectile points of the Midwestern United States from 500 BC to AD 500 can be mainly classified as dartheads and are quite different in form from the contemporary point styles of the Plains (Christenson 1986). On the basis of the form and metrics of weapon tips it is more likely that the bow and arrow was introduced to the Plains from further north by a culture like Late Western Shield culture (Laurel).

Relevant to the relationship between Pelican Lake and Besant it is worth noting that in southern Saskatchewan these constructs have been placed in chronological sequence rather than as partial contemporaries (Burley et al. 1982: 46, Fig.1). An early observation that Besant projectile points evolved from Pelican Lake forms (Davis and Stallcop 1966: 29-30) has recently been supported by the evidence of projectile point technological continuity at the Bow Bottom tipi site in southeastern Alberta (Van Dyke and Head 1983). A recently published report on a major stratified river crossing site in Saskatchewan (Dyck and Morlan 1995) is critical to the debate surrounding the issue of whether a single cultural development occurred on the Northern Plains at this time or whether there were two different and competing cultures. Layers VII to XVI of the Sjovold site encompass Period IV and range from Pelican Lake at 900 BC to transitional Besant/Avonlea at AD 400. Within this sequence of stratified occupations the 200 BC Layer X is referred to as "...a Besant/Pelican Lake occupation..." (Ibid: 103). When viewed through approximately 1,500 years of relatively continuous seasonal occupation, the artifact categories and even the use of rough stone for cooking suggest continuity for the eleven components involved, excepting the sudden appearance of pottery in Layer VII. Projectile points from the 400 BC Layer XI have a blend of Pelican Lake and Besant point traits and pose "...profound implications for the traditional archaeological practice of identifying preceramic archaeological complexes in terms of (unique) projectile point types. Though the practice has been fundamental to cultural classifications at gross initial stages of investigation, it fails us here" (Ibid: 388). It is important to emphasize that the in place development of point styles in the Northern Plains and the introduction of the bow and arrow weapon system from the east would not have been mutually exclusive events. Western point style trends would have been altered with the appearance of the bow as it is anticipated that weapon tip attributes would, in many instances, have to be modified in order to accommodate arrowshaft dimensions and the different aerodynamic requirements.

From Period III to Period V, extending from 4,000 BC to European contact, the proposition that Middle Plains culture, Late Plains culture, and Plains culture as used in this work, involved two different cultural traditions is accepted by most Plains archaeologists. The two developments are believed to have terminated in different historically documented linguistic groups such as the Blackfoot and Kootenai, respectively, (Reeves 1983). I could be accused of being neat-minded, or perhaps simple-minded, in advocating a single developing Plains tradition which extended through more than 6,000 years from the Middle Plains culture of Period III to Plains culture and the time of European contact. While parsimony may not always pertain, it is a reasonable assumption when it accommodates most of the evidence. A more cautious assessment of the changes that took place during Period IV on the Plains notes that "Whether this transition was brought about by alien intervention, or evolved gradually in place is not at all clear" (Forbis 1992: 60). The continuity hypothesis advocated here seems to be gaining in favour. Neither the archaeological evidence nor the historically recorded normal behaviour of hunters and gatherers supports arguments ultimately based upon assumptions of invasion, eradication, or absorption. The qualification 'normal behaviour' is necessary as the sudden impact on the Plains of European diseases, the horse, the gun, native involvement in European economics relating to the fur trade, and the westward shift of eastern native people, cannot be regarded as a normal state of affairs. It is on this basis that the historically documented bloody conflict between the Blackfeet/Gros Ventres and the Cree/Assiniboine alliances is rejected as being representative of pre-European warfare on the Northern Plains albeit the roots of the conflict may have gone back to pre-European times.

Radiocarbon dates from Saskatchewan, calibrated following Stuiver and Reimer (1986), indicate a linear arrangement of chronological overlaps of Oxbow to McKean to Pelican Lake to Besant to Avonlea etc. (Morlan 1993: Fig.3). It is recommended that the reader consult the Morlan article or, more currently, the diskette (Morlan et al. 1996) as they not only provide a detailed critical evaluation of a large number of radiocarbon dates but also thoughtful general summations of the radiocarbon dating of Northern Plains culture history. In opting for the less precise statistically determined age spread of any date (2-sigma as opposed to 1-sigma) it is astutely observed that "I prefer an accurate chronology to a precise one" (Morlan 1993: 42). References to radiocarbon dates pertinent to Period IV in other areas of the Northern Plains are as follows: Manitoba - Buchner 1979; Alberta - Brumley and Rushworth 1983; Byrne 1973; Fedje 1986; Marshall and Brink 1986; Reeves 1983; Vickers 1986; Wilmeth 1978; North Dakota - Gregg and Swenson 1987; Neuman 1975; Wood and Johnson 1973; Montana - Davis and Stallcopp 1966; Johnson 1977; Keyser 1979.

With reference to chronology "...it is only good stratigraphy that can unambiguously place ancient events in good chronological order. Point typology and radiocarbon dating are relatively ambiguous methods, and their ambiguities are inherently in opposition to one another. Radiocarbon dating causes separate events to appear to overlap in time because of measurement uncertainties and other variables described in greater detail elsewhere (e.g. Morlan, 1993). Past and current practice in northern Plains point typology has the opposite effect, because we tend to ignore stylistic and technological variations in order to place each projectile point into one of a small number of categories" (Morlan et al. 1996: p.6 of computer printout). In sum, "Overwhelmingly, Plains archaeology reveals widespread continuity in the hunting-gathering lifestyle, from Paleo-Indian through Late Prehistoric times, with significant deviations attributable to the intrusion of social and technological innovations from the east or southwest" (Michlovic 1986: 210).

Technology:

One way to approach Late Plains culture technology is to consider the nature of the tool kit through time, space, and by site function. Table 15 compares the major tool categories from the Pelican Lake, Besant, and Avonlea strata of the Long Creek site in Saskatchewan (Wettlaufer and Mayer-Oakes 1960) and Pelican Lake complex occupations inAlberta (Brumley 1975), Manitoba (Buchner 1979), and Ontario (Arthurs 1986). There were no radiocarbon dates from Occupation I of the Cactus Flower site in Alberta (Brumley 1975), the southeastern Manitoba combined sites (M-1 and LM-8) (Buchner 1979), or the Long Sault site in Ontario (Arthurs 1986), and only a questionably late date of 250 BC date (Wilmeth 1978) was obtained from the Pelican Lake occupation of the Long Creek site (Wettlaufer and Mayer-Oakes 1960). On the basis of projectile point attributes, however, the two Manitoba sites, which were located in the same general area and possessed similar assemblages, appear to be early and it is suspected would date to the beginning of Period IV. While the inclusion of the Long Sault site on the Rainy River in Ontario as a Pelican Lake complex occupation could be questioned, the assemblage from the site, albeit small, compares more closely with Pelican Lake complex materials from adjacent southeastern Manitoba (Buchner 1979 42-45) than to the late Middle Shield culture of Period III (Wright 1972; 1995) or the ancestral prepottery assemblage early in Period IV. In addition, the most common chipped stone from the Long Sault site occupation was Swan River chert of southern Manitoba and Saskatchewan (Syms 1977: 27-28) raising the possibility that the occupation pertains to seasonal forays from the Plains to the Rainy River. Knife River Flint also indicates Plains connections although there was also good representation of local chert sources. It is evident that Plains culture during portions of Periods III, IV, and V penetrated well into the western margins of both the Great Lakes-St.Lawrence Forest and the Boreal Forest. Given the archaeological history of the Rainy River, it is no surprise that a Pelican Lake complex seasonal occupation is actually represented at the Long Sault site as opposed to simply the diffusion of some western projectile point styles to the east. Table 15 permits an general assessment of the nature of the tool kit and the presence-absence of continuity through time from Period IV into Period V at the Long Creek site as well as geographical technological variations from Alberta to Ontario. In contrast, Table 16 focuses on seven Besant complex components, three of which were kill sites and the remainder camp sites, in order to determine if site function affected the content and relative importance of the various elements of the tool kit.

At the general artifact category level, the Pelican Lake, Besant, and Avonlea stratigraphic sequence of complexes at the Long Creek site are similar. Tool assemblages of all three complexes are dominated by projectile points, biface knives, and scrapers. Such continuity through time of the gross quantitative nature of the tool kit is more

Category	**Cactus Flower**		**Long Creek**						**Man.**		**L.S.**	
			PL		**B**		**A**					
	f	%	f	%	f	%	f	%	f	%	f	%
Projectile points	7	17.5	8	36.4	5	27.8	9	31.0	28	30.8	5	11.6
Biface knives	1	2.5	3	13.6	3	16.7	2	6.9	27	29.7	9	20.9
Side scrapers	18	45.0	2	9.1	4	22.2	12	41.4	?	?	12	27.9
End scrapers	4	10.0	5	22.7	3	16.7	6	20.7	29	31.9	15	34.9
Flake chisel	-	-	3	13.6	-	-	-	-	-	-	-	-
Choppers	4	10.0	1	4.6	-	-	-	-	2	2.2	-	-
Flake knives	4	10.0	-	-	-	-	-	-	3	3.3	-	-
Spoke shaves	2	5.0	-	-	-	-	-	-	-	-	-	-
Drills	-	-	-	-	2	11.1	-	-	1	1.1	-	-
Shell bead	-	-	-	-	1	5.6	-	-	-	-	-	-
Abrader	-	-	-	-	-	-	-	-	1	1.1	1	2.3
Ground stone	-	-	-	-	-	-	-	-	-	-	1	2.3
Totals	**40**	**100.0**	**22**	**100.0**	**18**	**100.1**	**29**	**100.0**	**91**	**100.1**	**43**	**99.9**

TABLE 15: COMPARISON OF LATE PLAINS CULTURE ARTIFACT CATEGORIES FROM ALBERTA, SASKATCHEWAN, MANITOBA, AND ONTARIO SITES The Alberta, Manitoba, and Ontario sites are all Pelican Lake complex occupations while the three sequential strata from the Long Creek site in Saskatchewan pertain to the Pelican Lake, Besant, and Avonlea complexes, respectively. The comparative unit designated 'Man.' pertains to the combined site assemblages from the M-1 and LM-8 sites of the same general area whose assemblages were not isolated in the original report. Scrapers from the latter two sites were also stated to be 'predominantly' end scrapers. Twenty red ochre nodules have been excluded from the Long Sault site assemblage (L.S.) in Ontario.

understandable within a single developing tradition than in a site with alternating alien traditions. If, for example, a Late Western Shield culture (Laurel) occupation had intruded itself between the Pelican Lake and Avonlea occupations of the Long Creek site a discontinuity in the tool kit trends would have been readily apparent. This was clearly the case in the Early Shield to Middle Plains (Oxbow complex) to Middle Shield to Late Plains (Pelican Lake complex) to Late Western Shield (Laurel) stratified cultural sequence at the LM8 and M-1 sites in southeastern Manitoba (Buchner 1979) or the Period V Plains culture (Avonlea complex) intrusion into a forest adapted stratified cultural sequence at the Pas Reserve site in west-central Manitoba (Tamplin n.d.). A high frequency of Knife River Flint in all three strata of the Long Creek site reinforces the view that a single developing tradition is involved as well as the use of the site for the same purposes. Unfortunately the small samples of artifacts from all three occupations make more detailed comparisons suspect. The sharing of general artifact categories in Pelican Lake and Besant has also been noted in Alberta (Vickers 1986: 80). While the

Pelican Lake samples shared most tool categories there were considerable differences in the frequencies of various elements, a situation which could either reflect spatial differences from Alberta to Ontario or other factors such as site function, season of occupation, and sample size.

In evaluating the tool kit of Late Plains culture it is important to take site function into consideration. With this in mind Table 16 provides the tool category frequencies from three bison kill sites, the Richards Kill site in Manitoba (Hlady 1967), the Melhagen site in Saskatchewan (Phenix 1969), and the Muhlbach site in Alberta (Gruhn 1971), while camps are represented by the Grandora site in Saskatchewan (Dyck 1972), level 2 of the Naze site in North Dakota (Gregg 1987a), and two components of the Sjovold river crossing site in Saskatchewan (Dyck and Morlan 1995). The kill sites were single occupation events, level 2 of the Naze site was likely composed of a limited number of compressed components, the Grandora site evidence pertains to a single living floor, and the Sjovold components to short term temporary camps. All of the sites can be assigned to either the Besant complex or to the transition of Pelican Lake into Besant. The Muhlbach site produced a single contaminated date (Wilmeth 1978:92), the Melhagen site dates fall near the beginning of the Christian era (Dyck 1983), the Richards Kill site is undated, the Grandora site dates to about AD 200 (Wilmeth 1978), the two transitional Pelican Lake to Besant components of the Sjovold site date from 400 to 200 BC (Dyck and Morlan 1995), and the Naze site Besant occupation in North Dakota has several dates similar to the Melhagen site. Artifact categories have been slightly altered from the original descriptions for the sake of comparisons. The preceding sites were selected on the basis of component integrity, site variety, and sample size. Components represented by single tipi sites generally produce too limited a quantity of tools for comparative purposes and a site such as Larter in Manitoba (MacNeish 1958) was excluded on the basis of component mixture (Buchner 1980).

The most striking feature of Table 16 is the similarities in artifact category composition from the three bison kill sites in Manitoba, Saskatchewan, and Alberta. While the dominance of projectile points could be anticipated at a kill site, the paucity of butchering tools, such as knives, would suggest that primary butchering, involving skinning and dismembering, was likely done with a combination of simple unmodified flakes and projectile points that did double duty as knives. Given the scarcity of flakes at the Muhlbach site and, to a somewhat lesser extent, the Richards Kill site, the secondary knife function of projectile points is the most likely option. Such a function was suggested for the Melhagen site (Phenix 1969: 14) even though flakes were common. The presence of bifacial trimming flakes at the Muhlbach site (Gruhn 1971: 144) probably indicates the sharpening of projectile points used in the butchering process. In contrast to the kill sites, the Grandora and Naze sites are characterized by quite different frequencies of

Category	**Richards**		**Melhagen**		**Muhlbach**		**Grandora**		**Naze**		**X**		**XI**	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Projectile points	117	97.5	61	85.9	61	83.6	8	29.6.	20	19.2	6	19.4	3	12.5
Biface knives	-	-	5	7.1	3	4.1	7	25.9	11	10.6	2	6.5	4	16.7
Side scraper	3	2.5	2	2.8	5	6.9	7	25.9	31	29.8	4	12.9	6	25.0
End scraper	-	-	3	4.2	2	2.7	3	11.1	6	5.8	11	35.5	10	41.7
Drills	-	-	-	-	1?	1.4	-	-	5	4.8	3	9.7	-	-
Spoke shave	-	-	-	-	-	-	1?	3.7	4	3.9	1	3.2	-	-
Abraders	-	-	-	-	1?	1.4	-	-	1	1.0	-	-	-	-
Multipurpose tool	-	-	-	-	-	-	1	3.7	-	-	-	-	-	-
Gravers	-	-	-	-	-	-	-	-	10	9.6	-	-	-	-
Hammers	-	-	-	-	-	-	-	-	5	4.8	-	-	-	-
Choppers	-	-	-	-	-	-	-	-	3	2.9	-	-	-	-
Hammer-anvil	-	-	-	-	-	-	-	-	1	1.0	-	-	-	-
Mano	-	-	-	-	-	-	-	-	1	1.0	-	-	-	-
Preforms	-	-	-	-	-	-	-	-	-	-	3	9.7	-	-
Bone flakers?	-	-	-	-	-	-	-	-	2	1.9	-	-	-	-
Bone awl	-	-	-	-	-	-	-	-	-	-	-	-	1	4.2
Bone grainer	-	-	-	-	-	-	-	-	-	-	1	3.2	-	-
Shell bead	-	-	-	-	-	-	-	-	1	1.0	-	-	-	-
Copper beads	-	-	-	-	-	-	-	-	2	1.9	-	-	-	-
Copper awl	-	-	-	-	-	-	-	-	1	1.0	-	-	-	-
Total	**120**	**100.0**	**71**	**100.0**	**73**	**100.1**	**27**	**99.9**	**104**	**100.2**	**31**	**100.1**	**24**	**100.1**

TABLE 16: LATE PLAINS CULTURE TOOL KITS RELATIVE TO INFERRED SITE FUNCTION Tool categories have been modified somewhat from the original descriptions for comparative purposes. Pottery from the Naze site and the single pot sherd from the Melhagen site have been excluded. All sites pertain to the Besant complex or its transition out of the Pelican Lake complex. The Richards Kill, Melhagen, and Muhlbach sites are sites where large numbers of bison were killed and butchered. The other sites represent a range of campsites. X and XI stand for two of the levels in the stratified Sjovold river crossing site.

artifact categories with processing tools such as biface knives and scrapers being considerably more abundant than projectile points. The Naze site, which is believed to be a winter campsite, differs from the other sites in its greater variety of tool categories. The two components of the Sjovold site, believed to have been occupied by small transient groups intent on crossing the South Saskatchewan River, are of interest as they represent two occupations by related people only separated in time by some 200 years. Differences between these two components probably reflect the small sample sizes involved and might explain the coefficient of similarity between the two tool kits being a relatively low 131.4 (Brainerd 1951). This coefficient provides figures ranging from 0 to 200 with the former indicating no similarity between the two samples and the latter indicating identical comparative units. Bone preservation was limited at the Richards Kill and Grandora sites (Ian Dyck, Canadian Museum of Civilization: personal communication) but the other sites produced no or few bone tools. It is possible, however, that some of the metapodials and long bones with ends diagonally broken off at the Melhagen and Muhlbach sites functioned as convenience tools in butchering and hide removal. Such tools can only be identified by particular breakage patterns and subsequent wear and breakage resulting from their use. At the time of European contact bison metacarpals, metatarsals, tibiae, femora, ribs, and shoulder blades were all used as hide fleshers (Verbicky-Todd 1984: 190). It is probable that many items treated as bone and stone refuse by archaeologists in the past actually functioned as expedient tools. In a similar vein the 'finished' tool categories, such as projectile points and scrapers, likely were multi-purpose rather than single-purpose implements.

In Late Plains culture technology regional differences occur which are to be expected given the extensive territory involved. Pottery vessels, for example, are most common in the east (Walde et al.1995: 18). Pottery associated the Pelican Lake projectile points in the 600 BC level 1 of the Naze site in North Dakota (Swenson 1987) consisted of four grit tempered, coil-constructed vessels with straight or everted rims and cord malleated exteriors, sometimes with superimposed incising and a row of circular punctates producing interior bosses or perforations. The pottery, attributed to the Plains Woodland tradition (Johnson 1977), is clearly related to the Early Woodland pottery styles of the Midwestern United States and, indeed, to an unbroken distribution of an early cord impressed pottery tradition or horizon style extending from the Atlantic coast to the Northern Plains. As discussed in the preceding Chapter, a distinctively different pottery tradition represented by dentate stamped pottery formed an adjacent northern band extending in a similar fashion from the Atlantic Ocean to Manitoba. Between these two distinct pottery traditions there was varying degrees of sharing and mixing of the two pottery traditions. Pottery vessel manufacturing would have been a product of westward diffusion and is not indicative of a population movement. To the contrary, the projectile point styles at the Naze site associated with early pottery are typical Plains forms which bear no relationship to the equally distinctive Early Woodland stemmed points of the east (Christenson 1986).

The early pottery at the Naze site is quite simple in terms of its major characteristics. It would be difficult or impossible to recognize the age or cultural affiliation of much of this early corded pottery if it was recovered outside of a clear archaeological context; a situation which is more often the case than not. In this respect, early corded pottery may be more widely distributed in the eastern Plains than current evidence would suggest. There is no evidence to date, however, of pottery being recovered from Pelican Lake complex sites in the Canadian Plains or the more westerly regions of the Northern Plains. Pottery from the AD 1 level 2 (Besant complex) of the Naze site was slightly more abundant, being represented by seven vessels. These grit tempered, paddle and anvil (?) manufactured, shoulderless and conoidal shaped vessels with vertical, straight or everted rims, generally possess exterior cord malleated surfaces, sometimes with trailing, and rows of interior bosses or alternating exterior and interior perforations. One plain vessel and the presence of twined fabric impressions are also recorded. It is apparent that there is a close relationship between early and late Late Plains culture pottery in the east, contributing to the difficulty of recognizing temporal placement outside of clear archaeological contexts. Carbonized material from inside the Naze site vessels indicated that they were used for cooking. Vessels from Besant sites in South Dakota possess capacities ranging from 4 to 33 litres (Neuman 1975: 93). Conoidal shaped cord malleated vessels, sometimes with a row of interior punctates that, on occasion, raised exterior bosses, have been reported from Besant complex sites in Canada with decreasing frequency to the west (Reeves 1970: 164; Vickers 1986). Such vessels appear to be absent from Besant sites in Montana (Keyser 1979).

While pottery is largely restricted to the eastern Late Plains culture sites, the projectile point styles which characterize the culture define its geographic extent. It is therefore necessary to consider the point styles in some detail. Central to any such consideration is when the bow and arrow weapon system was added to the spearthrower and the impact that it had upon the form of the stone weapon tips. Point size has frequently been used as a basis for distinguishing arrowheads from dartheads with the former being smaller than the latter. There is a decrease in point size beginning with the Pelican Lake complex that is only interrupted by the appearance of the large Besant side-notched points (Gregg 1987a: 445). Small Pelican Lake corner-notched points have been interpreted as evidence of the introduction of the bow and arrow from the west (Dyck 1983: 110). Reeves (1983), on the other hand, regards the bow and arrow as entering the Plains from the west much later around AD 100. Recent evidence from the Sjovold site in Saskatchewan, however, has led to the suggestion that the bow and arrow may have arrived on the Plains at a much earlier date (Dyck and Morlan 1995). Layer XIV of this site has an exceptionally early date of 700 BC for the Besant complex. Both arrowheads and dartheads appear to be present. The suspected arrowheads range from 4 to 5 mm in thickness at the hafting point with an average thickness of 4.7 mm, sufficiently thin to fit into ethnographic wooden arrow shafts. Applying the discriminant equation of Thomas' study (1978) to separate arrowheads from dartheads would suggest that both weapon systems were present at the Sjovold site from 1,800 BC to AD 750 (Dyck and Morlan 1995: Table 26.1). There is a fundamental problem with the use of this particular equation in Canada. Thomas' sample of complete ethnographic arrows and spears with stone tips from the American Museum of Natural History came mainly from the southwestern United States and California. Excluding an aberrant Minomini specimen (Thomas 1978: Table 1, 50.1/5902), the 117 wooden arrowshafts had distal diameters ranging from 4 to 11 mm with a mean of 7.1 mm. The 122 wooden arrowshafts from the Canadian Museum of Civilization, some self-armed, came mainly from the Canadian Plains and Iroquois/Huron with the remainder being northern and eastern Algonquian specimens. Distal diameters of these wooden arrowshafts ranged from 7 to 14 mm with a mean of 9.1 mm (Figure 73). The Canadian sample distal arrowshaft diameters averaged 2 mm more than the American sample suggesting an important difference between Southwestern USA/California and Canadian Plains/Iroquois-Huron arrowshafts that was possibly related to more powerful northern bows. In terms of spearthrower shafts with points Thomas could find only 10 specimens, all from the Southwestern United States, Texas, and California. In an unpublished research paper I measured the socket diameters of 109 Archaic native copper dartheads. As these points have tapering sockets the distal diameters of the wooden spearshaft or foreshaft would represent a minimal measurement. Diameters ranged from 5 to 30 mm with a mean of 12.5 mm although over 80% of the measurements fell equally between 9 and 15 mm. The matter of separating arrowheads from dartheads is obviously complex, with cultural factors being involved as well as considerations of aerodynamics and hafting constraints. Since the wooden spearshaft and foreshaft of spearthrowers rarely survive in the archaeological record, we will likely never know the range of possible innovations that could have had an impact upon the characteristics of the point tip. In this work, the major criteria used in an attempt to separate arrowheads from dartheads is the requirement for the point to be sufficiently thin to be hafted onto an ethnographic wooden arrow shaft approximately 9 mm in diameter. This criteria, of course, could not isolate thin dartheads but only those weapon tips that could not possibly be fitted into a slotted arrow shaft. While Besant complex side-notched points have generally been classified as dartheads (Gregg 1987: 34; Reeves 1983: 140), apparently because of their wide spacing between notches (e.g. Dyck 1983: 115), as a rule they are sufficiently thin to fit an arrow shaft, even when only maximum thickness rather than thickness at the hafting point is considered. At the Richards Kill site in southern Manitoba the 23 complete points ranged from 3 to 5.5 mm in thickness with an average of 4.4 mm (Hlady 1967: Table 1). At the Muhlbach kill site in Alberta bifacially flaked and minimally flaked side-notched Besant points ranged from 4 to 7 mm and 2 to 9 mm, respectively (Gruhn 1971: 141 & 142). And at the Wahpa Chu'ga site in northern Montana Besant side-notched points ranged from 2.6 to 9 mm with a mean of 6.0 mm (Davis and Stallcop 1966: Table 1). Such thickness measurements, with the possible exception of the Richards Kill site, suggest that both darts and arrowheads were likely involved.

A digression is necessary to consider the varying and sometimes contradictory evidence that relates to the replacement of the spearthrower by the bow and arrow. Weapon systems were essential to survival for hunting people and such a technological transfer involving quite different human motor habits and affecting hunting strategies and conflict would have been of great importance to people at the time. While the

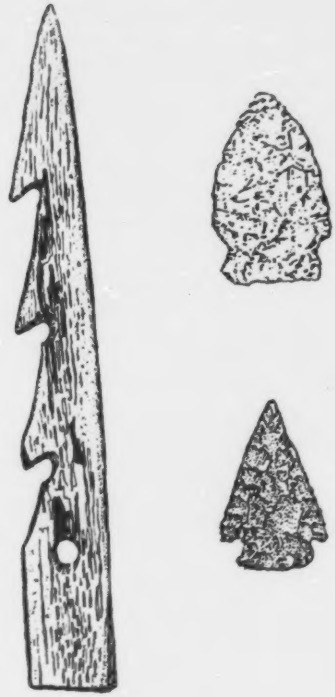

FIGURE 80: LATE PLAINS CULTURE ARTIFACTS The large, unilaterally barbed antler harpoon comes from southeastern Manitoba and probably functioned as a sturgeon spear. To the right are a typical Pelican Lake complex projectile point and above it a Besant complex type point. (Drawings by Mr. David W. Laverie. Scale approximately 85% natural size)

archaeological record is admittedly fragmentary the following sequence of events are believed to relate to the diffusion of the bow and arrow in North America. Other researchers prefer somewhat different scenarios. The bow and arrow was introduced from northern Asia into the Western Hemisphere by Early Palaeo-Eskimo culture prior to 2,000 BC (Blitz 1988). It spread across the Arctic with the colonizing Palaeo-Eskimos and then diffused from the east coast of Labrador and the Gulf of St.Lawrence westward into the interior of the continent. The transfer of the bow and arrow to Late Plains culture was likely from either Period IV Late Western Shield culture (Laurel) or late Period III Middle Shield culture to the east. A number of other researchers would opt for a Canadian Plateau of British Columbia origin or one from the Midwestern United States. As Late Western Shield culture moved into southern Manitoba during Period IV it is hypothesized that the bow and arrow was transferred to the Besant complex of Late Plains culture. Given that both Late Plains culture and Late Western Shield culture were adjacent to one another and contemporaries set the scene for a technological transfer. An abundance of North Dakota Knife River Flint and occasional Besant type projectile points on Late Western Shield culture sites in Manitoba and adjacent Ontario/Minnesota provides evidence of cultural contacts. Evidence that Late Western Shield culture relied almost exclusively upon the bow and arrow support the proposal that this culture was likely responsible for the introduction of the bow and arrow to Late Plains culture. A northern and eastern source for the diffusion of the bow and arrow to the Northern Plains best fits the evidence rather than a source like the Midwestern United States. Using weight and neck width of points from Illinois in order to make inferences regarding varieties of arrow and spearshafts, such as fletched or unfletched, single shaft or main shaft and foreshaft, produced interesting results. It was found that Early and Middle Woodland neck widths tended to concentrate between 14 and 20 mm (Christenson 1986: Fig.3), dimensions that could not accommodate wooden arrow shafts. Further, the Illinois evidence suggested the transition from the spearthrower to the bow took place in that region during Middle Woodland/Late Woodland times with most of the neck widths falling between 7 and 12 mm. The late adoption of the bow and arrow in the Midwestern United States excludes it as the source for the weapon system on the Plains. Weight was a factor in the separation of arrows from darts in the Illinois study with museum collection arrows ranging from 0.3 to 17.4 gms with an average of 2.1 gms and spears ranging from 1.6 to 7.9 gms with an average of 4.4 gms (Ibid: Table 2). It is important to note that in all efforts to metrically isolate arrowheads from dartheads there is always a significant overlap of the respective ranges. There is no absolute metrical distinction between the two types of weapon tips. While the thicker dartheads could not be fitted into wooden arrowshafts thinner dartheads could fit either spearthrower foreshafts or arrow shafts. Relevant to the discussion is the fact that the point types from the Midwestern United States are mainly stemmed and bear little similarity to the point forms of the Plains. The Besant complex has been generally regarded as the time when both spearthrowers and the bow and arrow were in use (Kehoe 1974; Morgan 1979: 387; Reeves 1970). A minority of Besant projectile points with neck widths between the notches of 8 and 10 mm have been regarded as arrowheads (Kehoe 1966: 838). The transition from spearthrower to the bow and arrow may have involved between 300 and 400 years (Reeves 1983: 189) but was likely a longer process. Regardless of the chronological sequence of spearthrower to spearthrower and bow to bow only there are still certain projectile point attribute continuities from Pelican Lake to Besant to Avonlea (Kehoe 1974: Fig.1).

Two criterion are used in this work to distinguish between dart and arrow tips. In addition to the already mentioned criteria involving the thickness of the portion of the notched stone point which had to be fitted into a wooden arrow shaft with a diameter usually between 9 and 10 mm, the width between the notches is speculated to be approximately the same as the diameter of the wooden shaft (see Figure 73). The former premise was noted during experimental tests "...where the arrow shaft is split or notched to receive the projectile point, as is necessarily the case with a chipped stone arrowhead, the diameter of the shaft places a definite limit upon the thickness of the arrowhead which can be wedged into the split or notch. Therefore, it is not the weight or the overall dimensions of a projectile point which determines how large it can be to be shot in a bow, but how it is to be mounted on the arrow shaft. In the case of a chipped stone projectile point, the critical dimension is the thickness of the stem of the point, which, in actual practice on Indian arrows, seldom is over 3/16 of an inch" (Hamilton 1982: 27). Where unusual incidences of archaeological preservation have permitted observation, dartheads are generally mounted on foreshafts with diameters smaller than the main spear shaft. Some of these foreshafts can be as small as 7 mm in diameter (Ibid: 42), therefore, overlapping of darts and arrows based solely upon haft thickness can be anticipated (see Thomas 1978: 469). A second distinguishing criteria between darts and arrows, which does not appear to be as critical as haft thickness, is the width measurement between the haft notches on the point (Forbis 1962: 87). For example, Meadowood side-notched points are regarded as the earliest evidence of the bow in the east. A small sample of nine such points from the Oberlander 2 site in northern New York State (Ritchie 1944) had width measurements between the side notches that ranged from 14 to 26 mm with a mean of 19.0 mm, far in excess of the approximately 9 mm average diameter wooden arrowshafts in the Canadian Museum of Civilization collections (personal measurement of specimens in the Rochester Museum and Science Center, Rochester, New York). There can also be a significant spread in the ethnographic wooden arrowshaft diameters (Thomas 1978, Fig.1; Figure 73 this volume). This speculative discussion of the differentiation of weapon systems and the diffusion of the bow and arrow in North America may strike some as an unnecessarily prolonged digression. Understanding culture change, however, is one of the most important, if not the most important tasks of archaeology and a major technological change from the earlier spearthrower to the bow and arrow provides an opportunity to assess the cultural ramifications attending the change in weapon systems. Further, the speculative elements in the scenario are, to varying degrees, testable.

The key point (pun intended) is that when all or the majority of the cultural systems, ranging from settlement patterns to most of the technological elements, are unchanged through time and space the appearance of a new stone weapon tip is more likely to be a product of a diffused innovation, whether it be the bow or some modification to the spearthrower, rather than being evidence of a population invasion and replacement event. Observations on the scarcity of projectile point haft fragments of Pelican Lake points at the Head-Smashed-In site when compared to Period V Plains culture arrowheads and its relevance to weapon shaft construction and point recovery (Reeves 1978a: 166), while not in themselves explanatory, do point to some form of technological change. There are also considerations involving projectile points being representative of horizon styles as opposed to the co-occurrence of point styles, particularly in certain regions such as the southern Foothills (Ronaghan 1986: 313-315). Is co-occurrence of different point styles at sites the product of component mixture or an actual association? Then there is the considerable morphological and metrical variability inherent in most point types and the temporal and spatial significance of these attribute differences. For example, the Besant complex points from the single component Muhlbach bison kill site (Gruhn 1971) had the following characteristics: point length ranged from 24 to 66 mm; width between notches ranged from 13 to 18 mm; base configurations were straight (44 %), concave (31 %), and convex (25 %); blade form ranged from lanceolate to triangular; 59% of the 61 points were bifacially flaked and the rest retained a portion of the original flake surface; and 83% of the points possessed basal grinding. It has been noted at the DjPp-8 site in the Crowsnest Pass on the Alberta-British Columbia border that through the 8,000 year cultural sequence stylistic changes took place in the projectile points but that other tool varieties remained relatively unchanged except for becoming smaller through time (Driver 1993).

An element of spearthrower technology which is rare on the Northern Plains is the stone spearthrower weight. These elongated objects, generally with lashing grooves at either end, are usually recovered from the surface of sites although they have been excavated at Besant sites (Neuman 1975: Plate 28, p & r). As with Middle Great Lakes-St.Lawrence culture (Laurentian Archaic) of the lower Great Lakes-upper St.Lawrence area the scarcity of such weights suggests that their function was symbolic rather than being essential to the efficient operation of the spearthrowers. The fact that spearthrower weights are frequently in the form of animal effigies (Wormington and Forbis 1965: 189) adds further credence to a symbolic function. Presumed plant food processing implements such as metates, manos, and pestles are rare on the Canadian Plains in contrast to further south (Ibid: 192). A possible Besant complex trait in both Manitoba (Joyes 1970: 210) and Saskatchewan (Wettlaufer 1955: 28) are linear flakes manufactured from Knife River Flint. Such items may have been imported rather than being manufactured locally. In most Northern Plains assemblages, including Late Plains culture, quartzite cobble reduction for simple spall knives, rough chopping-scraping tools, and unmodified flake tools are common but unfortunately with few exceptions (Dyck and Morlan 1995; Finnigan 1985), are rarely subjected to detailed analysis. Cobble workshop debris from the Strathcona site in Alberta did exhibit "...some very constant variables in lithic reduction techniques that do not change significantly temporally..." (Pyszczyk 1985: 89). This observation is in opposition, however, to the findings from southwestern Saskatchewan of differences between the quartzite cobble reduction procedures of Pelican Lake complex stone workers and subsequent stone workers (Finnigan 1985). Only recently has detailed attention been directed to the important role of fire heated rocks in cooking and processing substances (Dyck and Morlan 1995).

Late Plains culture people depended upon dogs to transport camp equipment. As mobility was essential to survival and as the dog was essential to mobility, each family would have required a requisite number of animals. Unlike browsing horses, dogs had to be fed meat thus requiring substantial quantities of pemmican and the need to transport dog food. The Blackfeet still refer to pre-European times as 'Dog Days'. It has been estimated that even a relatively small 3.9 m diameter tipi would require 10 and 8 hides for the cover and the interior liner as well as a minimum of eight poles (Finnigan 1982: 12). Such dwelling items would weigh 34 kg, 27 kg, and 72 kg, respectively, and since it is estimated that the maximum dog travois load was 34 kg it would have required a minimum of four dogs just to transport the 133 kg of this small tipi alone. It has been further estimated that it required 20 to 30 dogs to move a single household including its dog food pemmican stocks (Reeves 1990). Dogs could drag their loads from between 13 and 16 km a day (Forbis 1992: 45). While dog bones, such as found in the Pelican Lake complex occupation of the Long Creek site (Wettlaufer and Mayer-Oakes 1960: 47), probably reflect the occasional use of the animal as food or for ceremonial purposes such practices would have had to be balanced against the dogs' primary function as a cartage animal.

A major research programme involving a Pelican Lake complex quarry-campsite in southwestern Montana (Davis 1987; and Dr. Leslie B. Davis, Montana State University: personal communication and examination) provides an exceptional array of evidence pertinent of Late Plains culture. The Schmitt site was exploited solely by Pelican Lake complex people for approximately 1,000 years between 1,400 and 200 BC. The entire area of human activity consisted of a major quarry, 4 minor quarries, 4 tipi rings with three of these occurring at the main mine, and two large campsites to the north and east of the quarry area. Mining proceeded by undermining chert masses along fracture zones in the old solution channels of the limestone. The combination of undermining and levering was capable of moving blocks of limestone which weighed many tons and produced open pits estimated at 600 square metres and associated tailings of 715 square metres. As could be expected, the cut and fill mining procedure thoroughly churned the deposits destroying any possible stratigraphy. The wedge/pry and undercut procedure was capable of following cavity fissures for as much as 8 m. Mining tools consisted of articulated bison tarsals and metatarsals, split ribs, and deer and elk antler prys. Cobble hammerstones were also common. Of the approximately 2,400 artifacts from the main quarry pit 79 % were dedicated to the process of acquiring chert (hammerstones, bone and antler prys, wedges, and picks) while awls, punches, and scrapers represented another 7%, gravers and perforators 4%, choppers and knives 4%, projectile points and an antler dart shaft straightener 2%, small stone and antler hammers and flakers 1%, ornaments such as *Olivella* and steatite beads, clam shell ornaments, and a hawk feather fan 0.2%, as well as miscellaneous items such as hafted knives and chipped discs 0.3%. Dog remains were represented in the faunal collection which included bison, pronghorn, bighorn sheep, elk, and clam shells. It is apparent from the findings at the Schmitt site that the site functioned not only as a quarry operation but also as a seasonal base camp within which the refurbishing of the stone tool kit was one function. Quarries are sources of information on a range of cultural systems in addition to the technological facet of chert exploitation and stone tool production. Exotic items such as *Olivella* beads from the Pacific coast, porcellanite from eastern Montana, Knife River Flint from North Dakota, obsidian and basalt from the mountains south of the Missouri headwaters and Yellowstone in Wyoming, indicate relationships with distant regions. Unfortunately the Schmitt site chert itself has defied finger-printing methods and thus the extent of its distribution cannot be traced at this time.

Subsistence:

Though Late Plains culture subsistence was variable, it did coalesce around a single species - bison. Around 1,000 BC the bison herds had attained their maximum range (McDonald 1981) and likely their greatest numbers thus encouraging hunters to perfect methods of killing entire herds (Forbis 1992: 54-55). In addition to food, historical documents record that the bison was the basis for much of Plains culture material culture. There is little reason to doubt a similar importance of hides, sinew, organs, and bones in the manufacture of a majority of the household articles in pre-European times. There was a marked increase in the use of bison jumps beginning with Late Plains culture (Arthur et al. 1975) which may correlate with the increasing importance of pemmican as a winter food, dog food, and trade item. In fact, communal bison hunting sites involving pounds and traps as well as jumps appear to increase in numbers from Pelican Lake times on (Reeves 1970). There is the problem, however, of the deep burial and/or erosion of Middle Plains culture sites which could distort the view of hunting practices in Period III. At the bison jumps, which would have been only minimally affected by erosional and depositional cycles, there is little or no evidence of Early and Middle Plains culture as represented by the Mummy Cave, Oxbow, and McKean complexes. This lends credence to the opinion that the bison jump was a method first perfected as an important hunting strategy during Late Plains culture times. Jump sites involved the skilful manoeuvring of bison herds into a position where the animals could be stampeded over a cliff. In addition to bison killed outright in the fall, crippled animals would be dispatched and the carcasses butchered and processed. The latter activity would have had to been done rapidly before putrefaction set in.

There is debate concerning bison behaviour as it relates to seasonal herd movements. One view holds that the bison herds moved out onto the Grassland in the spring and returned to the Parkland for the winter (Morgan 1980). Another view states that bison herds did not follow predictable patterned migration routes (Hanson 1984). Rather than an either/or situation it is suggested that both of these views probably prevailed to varying degrees depending upon local situations. In this respect, "Bison on the northern Great Plains in what is now Canada, during their free roaming days, employed a dual dispersion strategy which maximized feeding opportunities. This strategy resulted in a situation in which some herds, often the majority, migrated seasonally from woodlands to grasslands in the spring and back to the woodlands in the fall, while some herds did not migrate, remaining in suitable woodland environments the year round throughout the bison range. The largest, massed concentrations occurred during the migration and during the rut in summer" (Epp 1988: 310). All discussants agree that bison could be found throughout their range for the entire year and were hunted in the winter as well as at other times of the year (Arthur 1975). Such behaviour does not accommodate the hypothesis that discrete hunting bands on the Canadian Plains had a particular association with specific bison herds (Gordon 1979).

There appears to have been three major bison groupings: a western herd which moved onto the Grassland from the Rocky Mountain woodlands in the spring and returned to the woodlands in the fall; a central herd which shifted south into the plains in spring and returned north to the Parkland for winter; and an eastern herd which moved to the west into the Grassland in spring and returned to the woodlands in the fall (Morgan 1980). In addition to these major seasonal migrations there were numerous variations including sedentary groupings of bison in the grasslands, parklands, and forest. Climatic fluctuations which effected grass browse influenced bison movement patterns which, in turn, determined hunting patterns (Morgan 1979). Local snow conditions had a direct bearing upon bison availability (e.g. grass exposure) and vulnerability (e.g. snow embankment and kettle traps). While the major communal bison hunts may have involved the hunting of bulls in early summer with a major fall hunt focused on cows and their calves, communal hunts could have taken place throughout the year. Whether there were large or small winter aggregations of people depended upon all of the factors affecting bison aggregation and dispersion such as forage, water, and shelter (Arthur 1975).

There is some evidence of increased pemmican production during Late Plains culture times (Reeves 1990). It has been historically documented that it took two cows or a large bull to produce a 100 lb skin of pemmican and that 1 lb of pemmican was equal to 3 to 5 lbs of fresh meat and lasted indefinitely if berries were not added (Verbicky-Todd 1984: 182).

To illustrate the scope of subsistence practices in Late Plains culture a series of sites are considered starting in the east and advancing westward. The Pelican Lake complex occupation of the Long Sault site on the Rainy River of Northern Ontario (Arthurs 1986) would have taken place within a mixed hardwood Great Lakes-St.Lawrence Forest vegetation province. This is reflected in the importance of moose, beaver, sturgeon, pickerel (walleye), and sucker. To the southwest, at the Naze site in eastern North Dakota, the Pelican Lake complex fall-winter occupation of this forest flood plain site contained bison, elk, beaver, and canid bones (dog/coyote) (Gregg 1987a) as well as chokecherries, lambs quarters, bedstraw and one possible marsh elder (*Iva annua*) which could represent a cultivar (Kordecki 1987: 101). In the following Besant complex occupation of the site bison and dog/coyote were most common followed by beaver, opossum, and elk. An abundance of carbonized wild rose, bedstraw, and snowberry is attributed to burning off the campsite surface cover rather than being evidence of plant use (Benz 1987). Abundant carbonized bur oak acorns, lambs quarter seeds, wild plum, and chokecherries, however, appear to represent food stuffs. In the Pelican Lake occupation of the Bjorklund site in the Boreal Forest-Canadian Shield setting of southeastern Manitoba (Buchner 1982) bison, beaver, and sturgeon are represented with bison indicating a winter occupation and sturgeon a spring occupation. To the west, in the Parkland area of Manitoba, the dominant position of bison at the Larter and Lockport sites (MacNeish 1958) are assumed to pertain, in part, to Pelican Lake complex occupations. In Saskatchewan, at the Long Creek site "Bison bone were so dominant among the faunal remains as to indicate almost complete dependence on this animal by the people of all levels" (Wettlaufer and Mayer-Oakes 1960: 123). Carbonized chokecherries along with bison and dog are recorded from the Grandora site in Saskatchewan (Dyck 1972). Bison remains at the Besant complex Muhlbach kill site in Alberta (Gruhn 1971) indicate that the animals were butchered on the spot along with some grease rendering. Late Plains culture tipi sites in southern Alberta, regarded as winter settlements, generally contain bison and deer remains (Vickers 1986) while the Hartell Creek site, a probable spring occupation, contained foetal bison, bison, elk, antelope, dog, and badger (Ibid: 85). At the DhPj-11 site in the Foothills of southwestern Alberta bison remains dominated but coyote, dog, kit fox, prairie hare, and whitetail deer were also present (Quigg 1974: Table 4). The site is regarded as a winter station where bison were killed when they became mired in snow banks. Also in the Foothills in the Banff region bison, deer, mountain goat, mountain sheep, wolf or dog, ground squirrel, mallard and trout are recorded (Fedje 1986). Although a wide range of species were hunted at the summer base camp at the DjPp-8 site in the Crowsnest Pass of Alberta and the exploitation pattern appears to have been consistent over the 8,000 years of occupation, bison was clearly of primary importance (Driver 1993: Table 2). Hunters at this particular site had the resources of foothills, grasslands, subalpine and alpine vegetation zones, as well as lake and river settings available to them. While a major purpose for the occupation of the Schmitt site in Montana by the Pelican Lake complex people was the mining of high quality chert, a wide range of animals were consumed. These consisted of bison, elk, white-tailed deer, bighorn sheep, pronghorn antelope, ground squirrel, dogs, skunk, jack and cottontail rabbit, beaver, painted turtle, and clams (Davis 1987: 30).

The Sjovold site on the South Saskatchewan River is of particular interest. Not only was it repeatedly used by transient groups of people crossing the river but it was also situated in a rich, local ecological riverine valley locale. Period IV components, represented by Layers VII to XVI, are characterized by mammal remains followed by molluscs with little evidence of fish, amphibians, or birds (Dyck and Morlan 1995: Table 5.1). The most common mammals were bison followed by large canids (wolf, dog, coyote). Only a trace of the wide range of animal species that would have occupied the valley woods was present. To judge from the bison bone recoveries, the kill sites were some distance from the campsite. An abundance of cows and calves from the levels between 1,500 and 200 BC suggest communal hunting (Ibid: 173). A possible change in dietary habits may relate to the fact that no clams were found below the 150 BC Layer IX. An important aspect of the faunal analysis of the components of the Sjovold site was the reconstruction of the taphonomic histories of the animal remains. Taphonomy is the study of all of the factors which can alter bone condition and the nature of bone assemblages from the time of an animal's death to the recovery of the remains from an archaeological or palaeontological site (see Morlan 1980). In addition to human activities, such as cutting, breaking and burning bones, contributions are made to the faunal assemblages of most sites by scavengers and carnivores. Remains are further altered by weathering and other natural processes. Many small mammal, amphibian, and bird remains from an archaeological site, for example, probably have nothing to do with the humans that once occupied the site but rather relate to the activities of owls, hawks, and other predators.

Other than the recoveries from the Naze site in North Dakota (Benz 1987) there is relatively little direct evidence of the use of plant materials in Late Plains culture. This is undoubtedly due to two factors; the perishable nature of plant materials and, until recently, inadequate archaeological field recovery methods. As documented in the historical records, berries and roots would have been important items in the diet and seasonal rounds would have been timed for the harvesting of such crops. It is certain that the importance of plant materials rested with their vitamin content and, in particular, Vitamin C or ascorbic acid, which would have been required to avoid scurvy during a winter diet of meat. Vitamin C in dried or cooked meat is lost due to heat, light, and air "...which stimulate the activity of oxidative enzymes" (Dunne 1990: 44) and must be obtained from plants or raw liver. It is recorded that Plains Indians ate raw liver, kidneys,

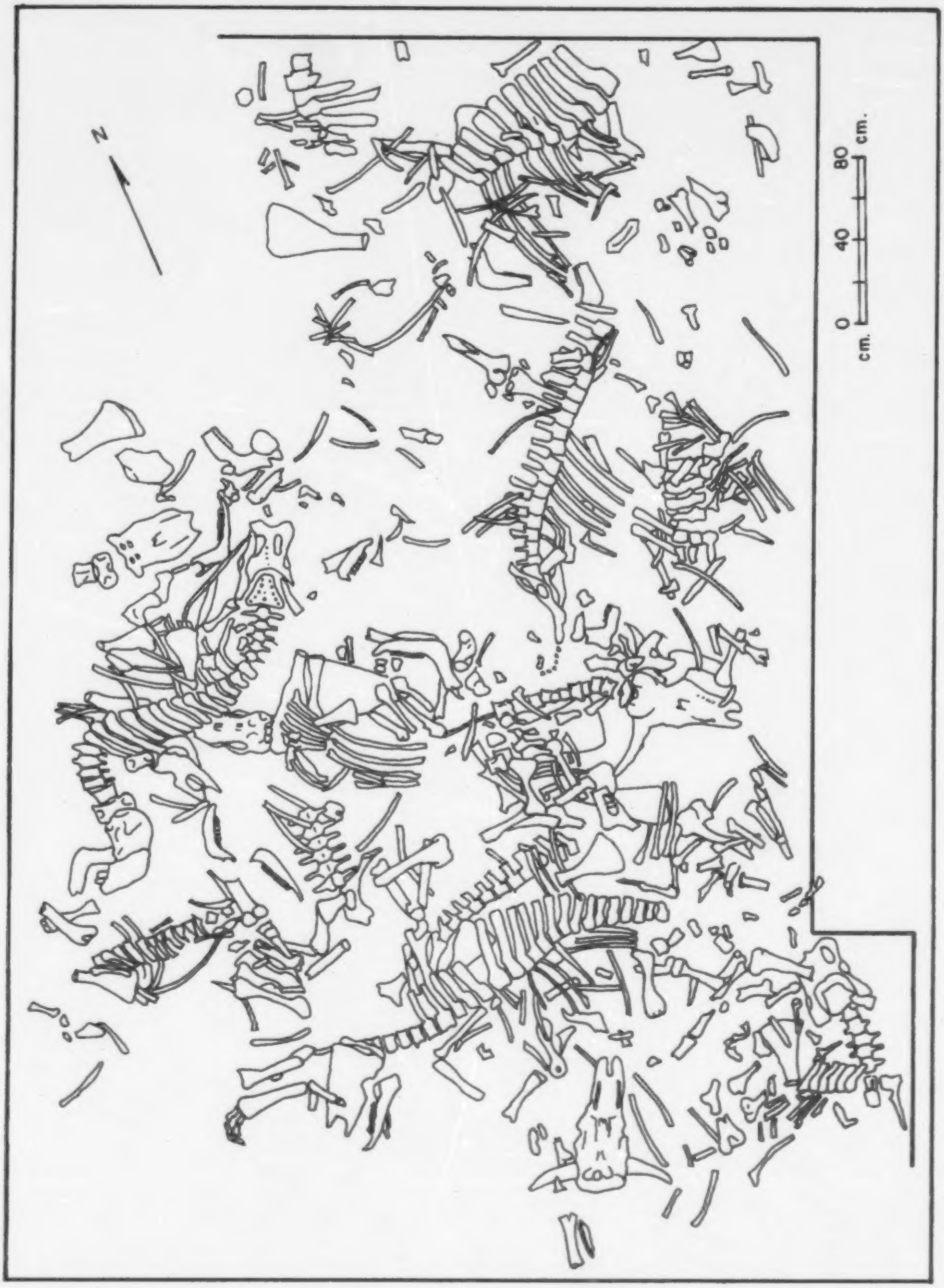
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FIGURE 81: AN UNUSUAL BISON KILL SITE The bison remains discovered at a Late Plains culture kill site in north central Montana on the Milk River, just south of the Canadian border, indicate butchering procedures whereby limbs and other choice portions were first carried off to the campsite for consumption and processing while the pelvic girdles, torsos, and skulls were left at the kill site. Something, such as a flash flood, must have interrupted the butchering process as it was not completed. A layer of sediments apparently covered the remains and protected them from scavengers otherwise the bones would have been scattered. (Adapted from Keyser 1979: Figure 95. Drawing by Mr. David W. Laverie)

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tongue, eyes, testicles, blood, belly fat, parts of the stomach, snout gristle, marrow, brain, etc (Verbicky-Todd 1984: 176). Beef, which should be of approximately equivalent nutritional value to bison, lacks Vitamin C except for the liver which is quite high in the vitamin. Dried fruit, on the other hand, can actually have a higher Vitamin C content than the raw fruit (Dunne 1990: Section VII, Table of Food Composition). The process of producing pemmican would destroy or severely deplete the Vitamin C content which may explain why native women would sometimes add berries to the pemmican even though it reduced the preservation qualities. In this respect, plants would have been more important for their essential vitamins rather than simply their caloric value.

It has been inferred that the main reason for the occupation of the Pilgrim site in southwestern Montana was the harvesting of roots. The 70 tipi rings at this site ranged in age from the Pelican Lake complex to the Plains culture of Period V. Among the tipi rings were five Pelican Lake complex dwellings that were clustered together and contained the same kinds of chipping debris suggesting that they represented a single occupation (Davis 1983). Although dating to late in Period III the findings are pertinent to subsequent Late Plains culture. Occupants of the Pelican Lake complex tipi rings are believed to have been involved in the harvesting of an exceptionally rich concentration of bitterroot (*Lewisia rediviva*) and wild parsley (*Musinion divaricatum*). The roots of these two plants would have been gathered in the spring along with possibly as many as 38 other useful plant species in the area. Occupation time was likely short as historical documentation suggests that only two weeks would have been required to dry the roots. Dried roots could then be easily stored and transported (Aaberg 1983; Davis 1985). Fresh water, fuel, game, and nearby chert deposits would have been additional attractions to the site.

Settlement patterns:

Late Plains culture settlement patterns were quite variable. As a rule, the major settlement pattern consisted of variations on the following scheme: relatively sedentary winter settlement in the forested river valley bottoms, foothills, and parklands with both communal and individual bison hunting and partial reliance upon stored meat supplies; spring movement to valley edges for exposure to sunlight with mobility dependant upon weather conditions; summer movement into topography suitable for bison stalking with tipi camps removed from both wood and permanent water sources and a time of ceremonial gatherings and, in general, the most mobile time of the year; and fall when the major communal bison drives took place before the shift back to winter quarters (Vickers 1986: 7-8). Factors such as drought could force bison herds to increase their reliance on winter range areas and, thus, impose a greater degree of sedentariness on their human predators (Morgan 1979). Under normal circumstances, however, the major human seasonal shifts would have followed the bison herds as they moved between their winter and summer ranges. While visually impressive and subjected to considerable study, sites such as Head-Smashed-In (Reeves 1978a) or Old Women's (Forbis 1962) buffalo jumps, where bison herds were manoeuvred into position and then stampeded over cliffs to their death, are few in number. Nearly as archaeologically visible as the 'jump' sites are the other communal 'kill' sites where numbers of bison were killed in pounds, surrounds, and natural entrapment features such as kettles, river and lake margins. The generally excellent bone preservation of the Plains ensures that such 'kill' sites, with their masses of bone, are readily recognizable. Not nearly so apparent but far more abundant are the tent rings and small campsites where people would have been involved in a host of activities ranging from hunting to lodge pole gathering and berry and root harvesting. There is some agreement that Late Plains culture is better represented on the Northern Plains than preceding cultures (Forbis 1982: 162; Gregg and Kordecki 1987a: 33; Hill 1985: 56). The frequency of Late Plains culture sites has been interpreted as a product of population increase associated with the florescence of the communal bison hunting-pemmican production system (Reeves 1990). Such a conclusion, however, must be tempered with an appreciation of the reduced archaeological visibility of earlier cultures due to depositional and erosional processes. Another significant settlement pattern aspect of Late Plains culture is an increase in the frequency of exotic items indicative of expanding trade networks. Wyoming obsidian, Montana and North Dakota cherts are particularly prevalent. Other exotics include *Olivella* and *Dentalium* shell beads from the Pacific coast. Native copper on Late Plains culture sites is rare and although assumed to have been derived from the Lake Superior region the evidence of West Coast contacts suggest that finger-printing of the copper is desirable to ascertain that it is not western in origin. The variety of exotics indicate that

BLACK AND WHITE PLATE XXXIII: TIPI ENCAMPMENT This photograph of a Blackfoot camp on the plains of southern Alberta is viewed by many as the stereotype of Indian settlement while, in truth, these portable bison hide dwellings were restricted to the southern Plains of Canada. The word 'tipi' comes from the Siouian language meaning 'ti' (to dwell) and 'pi' (used for). (Reproduced from Wright 1976: Plate 23)

an expansion of the earlier trade networks took place rather than the establishment of trade in new products.

In order to provide an impression of the settlement patterns of Late Plains culture, a series of sites, extending from east to west, will be considered in conjunction with their environmental settings.

A Pelican Lake complex occupation has been identified at the Long Sault site in the mixed hardwood forests along the Rainy River of Northern Ontario (Arthurs 1986). Located on a major water route that provided easy access to the resources of the Great Lakes-St.Lawrence, Boreal Forest, Parkland, Grassland, and Deciduous vegetation provinces (McAndrews et al 1987: Plate 4), the site was also a major spring sturgeon fishing centre. Other fish remains, as well as moose and beaver, are recorded. The absence of bison may have been due to the limited faunal remains recovered as bison remains do occur at other sites in the immediate area (Stoltman 1973). Site features were limited to four oval hearth floors. Exotic lithics indicate water travel along the east-west trending Rainy River which connects with the Winnipeg River to the west and, via interconnecting lakes and rivers, Lake Superior to the east. Chert from the Gunflint Formation of the Quetico region more than 200 km to the east is present as are a range of cherts and rhyolites from the northshore of the Lake of the Woods 130 km to the west. Swan River chert from the tills of southern Manitoba and Saskatchewan was most common and may indicate that the site was only seasonally occupied by westerners.

In southeastern Manitoba the Bjorkland site is situated on the Whitemouth River near its embouchure into the Winnipeg River (Buchner 1982). At the time of the Pelican Lake complex occupation around 1,000 BC, it would have been sitting almost at the juncture of three vegetation provinces; Great Lakes-St.Lawrence Forest, Boreal Forest, and Parkland. Even though the occupation likely took place in winter there were very few features. These included a shallow basin hearth filled with fire cracked rock and a bison tibia that had been thrust vertically into a hearth floor and appears to have functioned as an anvil (Buchner 1982: 103). The latter feature is more typical of the Besant complex than Pelican Lake. Bison, moose, and beaver were the most common mammals in the faunal assemblage while lake sturgeon was the most common fish. Of interest was the presence of Plains pocket gopher (*Thomomys talpoides*), a Grassland species. Exotic lithics were not given detailed consideration although it is mentioned that a Knife River Flint flake came from one of the features. Further northeast into the Boreal Forest-Canadian Shield region of Manitoba, the Pelican Lake occupations are characterized by a high projectile point and low scraper ratio leading to the inference that the sites represented winter hunt camps occupied by men and removed some distance from the main base camp and the women and children (Buchner 1979: 100). In contrast to the river and lake occupations of southeastern Manitoba, in the Nipawin area on the Saskatchewan River of east-central Saskatchewan occupations occur along the river valley rim with little evidence of settlement in the valley proper (Burley et al. 1982: 78-79).

The Richards Kill site in southwestern Manitoba (Hlady 1967) was a bison trap where a herd was driven into a slough, became mired, and was then slaughtered. Presumably some form of pound containment was used although no evidence of such was encountered. At this Besant complex site projectile points represented nearly all of the artifacts recovered. Bone preservation was poor but presumably the animals were butchered with projectile points and some of the 19 flakes reported. Most of the points were manufactured from Knife River Flint. It has been speculated that the Besant complex hunters of Manitoba made regular visits to the Knife River Flint quarries as part of their seasonal rounds (Syms 1977: 90). The paucity of local evidence of Knife River Flint preform or core reduction, however, suggests the likelihood that 'finished' objects, such as projectile points, were manufactured near the geological deposits in North Dakota by local bands and were then traded to more distant bands.

At the multi-component Naze site in North Dakota an unusual dwelling was recorded in the Pelican Lake level (Early Plains Woodland) of this forest-floodplain site (Kordecki 1987). The structure, dated to 500 BC, contained eight large centrally positioned post moulds that occupied an area 1.75 by 1.25 m. Wet clay had been packed around the bases of the posts after a trough had been dug to receive them. Fire had destroyed the structure and, in the process, fired the clay/mud post packing into daub. The centrally located posts appear to have supported a pole framework which, on the basis of debris distribution, involved a structure some 6 m in diameter. A possible bone tool cache was associated with the structure. Concentrations of fire cracked rock in the eastern portion of the dwelling may indicate the hearth area while the scarcity of such rock fragments to the north and west may indicate the sleeping area and entrance, respectively (Swenson 1987a: Fig. B.1). This fall-winter multi-family dwelling bears no resemblance to the 7.3 by 6.7 m La Roche site Besant complex dwelling in South Dakota (Hoffman 1968; see Figure 82). An abundance of fragmented bone, fire fractured rock, and large tools around two pit hearths in the Besant level of the Naze site has been interpreted as evidence of butchering and processing, including grease rendering.

Settlement in the few forested highlands situated in the sea of grass, such as the Great Sand Hills area of southern Saskatchewan, appears to have concentrated for the last 2,000 years along the edges of the heights rather than penetrating into the interior more than 7 km (Epp 1983: 196). Such a settlement strategy takes advantage of the variety of resources to be found in such environmental ecotones with their water, wood, and shelter while maintaining access to the bison herds on the adjacent plains. In terms of bison herd seasonal movements, a location on the edge of a highland suggests "...the advantages of locating habitations in topographically anomalous, wooded environments on the Plains grasslands in order to take advantage of a reliable bison supply and a high variety of vegetal and other animal resources which tended to concentrate in such places" (Epp 1988: 317).

The Sjovold site, on the South Saskatchewan River at the boundary of the Parkland and Grassland, is a unique multi-component site that owed its existence to a number of advantages relating to crossing the river at this particular point (Dyck and Morlan 1995). The site was used by transient groups of people from 2,000 BC to AD 1350. Features pertinent to Period IV from Layers VII to XVI included hearth areas, fire cracked rock concentrations, a stone boiling area, a rest area (?), a stone anvil, debris clusters, comminuted bone concentrations, a clay patch, and a rock filled pit. Only the hearths and fire cracked rock concentrations were numerous (Ibid: Table 4.1). Detailed

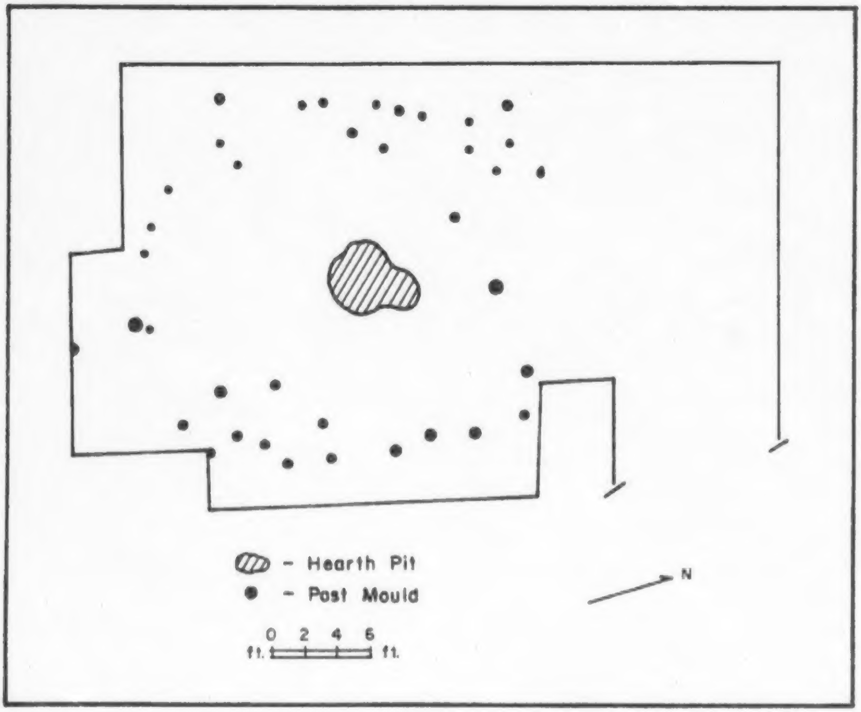

FIGURE 82: A LATE PLAINS CULTURE (BESANT COMPLEX) HOUSE STRUCTURE This 7.3 by 6.7 m structure excavated at the La Roche site in South Dakota was clearly demarcated by post moulds and a central pit hearth and represents a quite different form of dwelling from the more common tipi. (Adapted from Hoffman 1968: Figure 4. Drawing by Mr. David W. Laverie)

reconstructions of human activities, provided layer by layer, include such considerations as open air hearth areas inferred to have been fuelled by dried bison dung requiring a breeze to burn properly and carry away the excessive smoke, hide preparation and cooking areas, and evidence of weapon tip replacement. All of the activities identified were ones that would be carried on outside. No evidence of dwellings was encountered. Much of the detailed use and discard patterns associated with features are referable to particular female or male activities. Knife River Flint from 600 km to the southeast was abundant in a number of the occupations. The Sjovold site was well sheltered with abundant wood and water as well as nearby bison dung fuel, coarse rock for boiling and cooking, petrified peat for chipped stone tools a few km away, and abundant plant resources; all situated in a prairie valley setting. Interpreted as a fair weather river crossing campsite, the location took advantage of the ease of approach from both sides of the South Saskatchewan River and at a point where the river flow pattern was predictable.

Many Late Plains culture sites in Saskatchewan are characterized by an abundance of North Dakota Knife River Flint as well as some Wyoming obsidian (Dyck 1983: 107). However, the occurrence of this material is not consistent. At the late summer Besant complex Grandora camp site (Dyck 1972), where tool kit repair took place as well as grease rendering, there were only four flakes of Knife River Flint. Yet about 100 km to the southeast, at the Melhagen kill site (Phenix 1969), with a tool kit very similar to other Besant complex bison kill sites such as Richards Kill and Muhlbach, nearly 75% of the stone tools were manufactured from Knife River Flint even though the site was situated more than 500 km to the northwest of the quarries. It is beginning to appear that the lithology of kill site assemblages is distinctively different from that of the general purpose campsites of the same people. This distinctive chert or flint was common in the Late Plains culture strata of sites such as Garratt (Morgan 1979: 219), Long Creek (Wettlaufer and Mayer-Oakes 1960), and Mortlach (Wettlaufer 1955). All of the foregoing stratified sites are situated on the tributaries of major rivers. At the latter site, in the Besant complex occupation, a portion of a feature demarcated by post moulds was interpreted as possibly pertaining to a circular dwelling 7.6 m in diameter or even as a section of a Sun Dance Lodge (Wettlaufer 1955: 41-42). The densely packed, paired posts, shimmed with bones, and the absence of interior features are not typical of a dwelling. It is speculated here that the strength of the post supports, and their location on a creek bordered by undulating dune topography leading from potential bison catchment basins to both the east and west, suggest that the feature represents a portion of a pound rather than a house. It appears that it was the natural bison entrapment topography of the Mortlach site that accounts for its relatively continuous human use for 4,000 years. Many of the stratified sites on the Northern Plains are situated on terraces or below hills where slope wash has contributed to the stratification process. Since the sites were chosen in the first place for their natural bison entrapment topography, they are characterized by repetitive human occupations. Such a locale is the Walter Felt site in southern Saskatchewan (Kehoe 1974: 113) where the site is situated on a terrace near a number of kill areas associated with a narrow ravine. Given its exposed position, the site is interpreted as pertaining a spring snowbank entrapment area possibly associated with a pound.

The Muhlbach site in south-central Alberta is a Besant complex bison kill site (Gruhn 1971). This slough or mire kill site probably included a pound although no evidence of such a structure was encountered. It has been estimated that a total of 300 bison were killed with the remains spread out as a single layer of broken and disarticulated bone covering 1,200 square metres. Processing activities are indicated by butchered bone, large bison bones set vertically into 20 to 40 cm diameter pits to act as anvils used to break bones for marrow and grease extraction, and by an area of charred bone, likely a hearth. To judge from the number of animals represented, more than a single herd was captured. Eighty-nine percent of projectile points, which represented nearly 85% of the stone tools from the site, were manufactured from Knife River Flint. It has been speculated that the high incidence of Knife River Flint indicates that hunters actually visited the quarry site (Walde et al 1995: 19). Commuting 1,000 km from quarry source to kill site by foot, as would pertain in the case of the Muhlbach site, is highly improbable, especially when heavy hides, pemmican, etc. would have to be transported. As has been noted, Besant complex sites can be characterized by either their heavy or limited use of Knife River Flint, with its greatest use appearing most often at mass kill sites. Future study will have to determine if there was a symbolic association of this particular stone with the herd entrapment hunting method. The reader will have noted that Knife River Flint is sometimes also called chert or even chalcedony. These terms are often used interchangeably by archaeologists and, with reference to high silica content stone suitable for flaking into tools, it "...seems to be impossible to achieve archaeological-geologic agreement in nomenclature" (Wright 1994: 57).

Historically documented pounds or corrals were built on or at the base of a slope, on the level, at the foot of an embankment, or between hills (Verbicky-Todd 1984: 33). Such corrals stood from 1.2 to 2.4 m in height and enclosed from 0.2 to 0.6 hectares with 3.0 to 6.1 m wide entrances and guide fences ranging from 30 m to 2.4 km in length. Fences were extended by lanes composed of stakes, bison chips, and rocks that stood 1 m high and could lengthen the wings of the corral from 1.6 to 3.2 km. Such wings acted to funnel the bison herd into the pound. Direct evidence of such a structure comes from an exceptional Besant complex site in Wyoming. The Ruby site (Frison 1978: 214-216) consisted of a pound made of paired posts running along a slope with the downside portion of the corral being strongest in order to withstand the pressure of bunching bison. The guide fence wings leading into the pound made an angle just prior to the entrance in order that the frightened animals could not see that they were entering a trap until it was too late. Immediately outside of the pound entrance was a ceremonial structure that would have been used by a shaman or buffalo priest for 'calling' the bison into the trap (see Figure 86). Both angled pound entrance wings and ceremonial structures have been historically documented. The Ruby site pound exhibited evidence of rebuilding suggesting that it had functioned for a number of years. A processing area was located 305 m away. It has been estimated that it would have taken 20 men from 10 to 14 days to have constructed the pound.

At the Head-Smashed-In bison jump site there was little evidence of Late Plains culture grease production (Brink et al. 1987: 58), in striking contrast to the Period V Plains culture use of the site. This suggests that the former people simply butchered carcasses at the kill site rather than carrying out on-site pemmican production or grease rendering. Since most jumps were used a number of times it is reasonable to assume that prerequisite structures such as guide lanes would pertain to the earliest users but would have been elaborated and expanded upon through time. Evidence from the Head-Smashed-in and Old Women's buffalo jump sites indicates contacts with the Kootenay area in southeastern British Columbia in the form of Top-of-the-World cherts and Kootenay argillite (Reeves 1983: 87).

A Besant complex tipi ring at the British Block Cairn site in southeastern Alberta, with an interior diameter of 5.85 m, had the heaviest series of weight stones occurring mainly along the western trending edges and the least weight on the northern and eastern edges, suggesting that the structure was weighted to anchor it against mainly westerly and southerly winds (Finnigan 1982). At the 600 BC Bow Bottom site (Van Dyke and Head 1983; Vickers 1986), regarded as being transitional from the Pelican Lake complex to the Besant complex, the 16 contemporary buried tipi rings demarcated by weight stones ranged from 3.5 to 6.4 m in diameter and each contained a large central hearth. In four of the tipis, 80 to 90 % of the debris occurred in one half of the structures suggesting general activity areas. Concentrations of cultural debris inside the dwellings indicate a winter to spring occupation where "...it appears that the distribution is strongly determined by the presence of manufacturing activities centred on the hearths or, conversely, that it is an artifact of the deposition in a throw away zone represented by the hearth area" (Van Dyke and Head 1983: 234). The tipis stretched in a line along a terrace. EhPp-1, another Besant complex winter site situated in a treed valley tributary of the Bow River, contained a tipi ring 5.1 m in diameter with both central and external hearths. Fire fractured rock occurred in both the hearths and in nearby waste piles. The majority of the tools were found inside the tipi ring and consisted of processing tools such as scrapers, gravers, spokeshaves, and wedges rather than projectile points, knives, or heavy tools (McIntyre 1978). Grease extraction from bison bone is apparent and bison foetal remains indicate a winter-spring occupation. The lack of torso bones is evidence that the bison were being butchered elsewhere. General camp activities, such as secondary butchering, hide working, cooking, and tool manufacturing took place within the dwellings. Most stone was of local origin but 1.3% was exotic coming from the Rocky Mountains or Montana. The detailed description of a Pelican Lake complex tent ring at the Cranford site (Stuart 1990: 107-115) recorded an inside diameter of 4.6 m and an outside diameter of 5.5 m with the heaviest rock weighting along the western margins; an arrangement that conforms to the wind velocity-rock weighting hypothesis of Brumley and Dau (1988: 124-130). A transitional Pelican Lake-Besant tipi ring rock distribution at the site, however, did not support the wind velocity-rock weighting hypothesis. The Besant complex Ross Glen site near Medicine Hat, Alberta (Quigg 1979), consisted of tipi rings ranging in inside diameters from 3.3 to 8 m with an average diameter of 6.3 m. External hearths and post moulds and fire fractured rock and flake concentrations are also recorded. While local lithics dominate, scrapers were usually manufactured from Knife River Flint and Montana cherts. There appears to have been at least two different social groupings at this site who partially distanced their dwellings from one another but maintained a common intervening area with open air features (see Figure 87). Weight stones were not always used for holding a dwelling cover in place and yet, by using careful recording methods, an estimate can be made of the dwelling size, such as was the case at the Grandora site near Saskatoon (Dyck 1972; see Figure 83). It is also possible to estimate approximately how many people occupied a tipi. Using Northern Plains historical documentation involving the estimated tribal populations and number of reported lodges it has been calculated that the average number of people per lodge was eight (Brumley and Dau 1988: Table 15). Speculation that tipi rings became larger with the advent of the horse (Kehoe 1960) has not been borne out by the evidence (Wilson 1983a) and, therefore, the number of people per tipi extracted from the historical documents is probably valid for pre-European tipis.

In the southern Foothills of the Waterton Lakes and Crowsnest Pass areas of Alberta, the broader resource base provided by the merging of the Plains and Cordilleran ecosystems resulted in a more stable residential year round adaptation than was to be found on the Plains proper (Reeves 1978: 78). In this region, bison cows and juveniles could be taken in late fall-early winter and late winter-early spring with the use of jumps, kettle traps and, in the Waterton Valley, snowdrift traps. In addition, there were natural entrapment areas associated with lakes, rivers, springs, and wetlands. Rocky Mountain cherts of southwestern Alberta and southeastern British Columbia tend to be most common but Kootenay argillite from the Kootenay Lakes region and Avon cherts from Montana are also common. Knife River Flint tends to be rare except in Besant complex sites. Obsidian is rare (Reeves 1978a: 165), although in the Belly River region of southwestern Alberta it was more common than Knife River Flint (Quigg 1974: Table 3). In the 8,000 year sequence of occupation at the DjPp-8 site in the Crownest Pass there is some evidence of an increase in the use of exotic lithics, a development that has been attributed to changing social circumstances (Driver 1993). The sites in this region are regarded as winter settlements where shelter, wood, water, a variety of game and bison winter aggregations occurred as well as warming chinooks. A winter occupation is supported by the presence of bison foetal bones. Along the Belly River, camp sites occur mainly on the east side of the river while kill sites were on the west side where snow drifts would have acted as natural animal traps. In the Foothills, the settlement pattern consisted of "...elevationally structured seasonal patterns" (Ronaghan

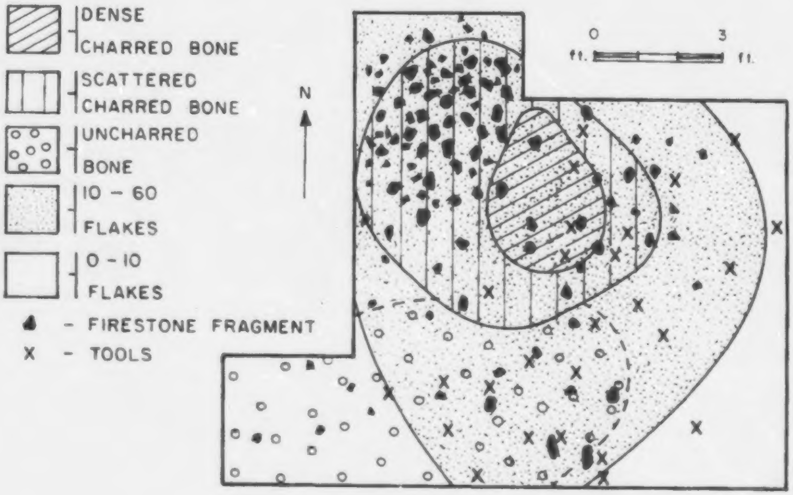

FIGURE 83: A BESANT COMPLEX LIVING FLOOR DEMARCATED BY CULTURAL DEBRIS Even though weight stones or post moulds were absent from the Grandora site near Saskatoon it was possible to roughly demarcate the dwelling floor by plotting the location and density of cultural debris. (Adapted from Dyck 1972. Drawing by Mr. David W. Laverie)

1986: 318). Some of these Foothill sites can have surprisingly long periods of continuous occupation. The Sibbald Creek site (Gryba 1983), with a southern exposure, firewood, the ameliorating affects of chinooks, and overlooking an 325 hectare meadow, was occupied nearly continuously for 11,000 years despite climatic fluctuations. Evidence of dwellings in the Foothills is rare. The Pelican Lake complex occupation of the Second Lake site (Fedje 1986) did contain stone slab-lined hearths as well as hearths composed of fire fractured rock and a 5.5 m diameter tipi ring has been reported from Crowsnest Pass (Calder et al 1977).

Just south of the Canadian border, the Wahkpa Chu'gn site in northern Montana (Davis and Stallcop 1966) appears to represent a bison pound that was used successfully only once. Direct evidence of an impoundment, however, was lacking. Two other pound sites in northern Montana illustrate some of the variability that can be encountered. Both the Donovan and Fresno sites (Keyser 1979) had processing stations associated with the pounds. At the Donovan site, however, the bison remains at the kill site were only partially butchered suggesting that for some reason the hunters were unable to completely process their kills (see Figure 81). At the Fresno site grease production was apparently an important activity, as suggested by the grease rendering boiling pits with associated concentrations of fire fractured rock and bone chips. Bone upright anvils were also recorded in the processing area.

Quarry sites were an important factor in Late Plains culture settlement. The large Schmitt quarry in Montana (Davis 1987, Dr.Leslie B. Davis, Montana State University: personal communication and examination) was discussed in the section on **Technology**. To reiterate, this 1,400 to 200 BC Pelican Lake complex site consisted of a large open pit flint quarry associated with three smaller quarries, two prospecting pits, four tipi rings, and two campsites/workshops. An even larger quarry complex occurs at the Knife River Flint deposits of western North Dakota. This aesthetically attractive toffee to very dark brown flint was exploited from Palaeo-Indian culture times until European metals replaced stone implements. It was during Late Plains culture times, however, that the stone was most extensively used and, in particular, by Besant complex people. Knife River Flint pebbles and cobbles are widely distributed in erosional deposits, which are dotted with numerous quarry pits approximately 6 m in diameter and from 1 to 1.2 m deep (Clayton et al 1970). It is estimated that nearly 30,000 m^3 of flint from these quarries was traded across the Northern Plains and eastward as far as the St.Lawrence River Valley of Québec and westward into the Canadian Plateau of British Columbia. The trade in Knife River Flint appears to have primarily involved finished products, particularly projectile points, which leads to the speculation that the band or bands in control of the quarries were apparently not satisfied with only trading preforms, blocks, or cores but carried the process through to its final stages. This, in turn, suggests that a specialized craftsman guild of stone workers functioned in the region. Certainly if preforms had been the major production stage involved in the trade in Knife River Flint one would expect a far greater amount of detritus indicative of secondary knapping across the Northern Plains than is currently evident. Such evidence, however, does appear in southern Saskatchewan (Ian Dyck: Canadian Museum of Civilization: personal communication), perhaps a reflection of the relative ease of water transport from the North Dakota quarries via the Missouri River and its tributaries and their proximity to the Souris River and southern Manitoba and Saskatchewan. Another important chert source, particularly for the more westerly regions, were the Avon quarries of Montana. At this site quarry pits up to 12.2 m in diameter and 1.8 m deep cover an area of nearly 93,000 m^2 (Reeves 1983: 358). While exotic flints have attracted considerable archaeological attention, it has only been recently that the importance of the ubiquitous local quartzite and petrified wood cobbles have received the attention they deserve (Dyck and Morlan 1995; Finnigan 1985; Pyszczyk 1985). Such local materials were of importance in the production of heavy chopping and scraping tools and especially large unmodified flakes which undoubtedly represented the basic knife form of all Plains cultures. At such sites as Strathcona in the northwestern Parklands of Alberta (Newton and Pollock 1985), reduction debris dominates the assemblage with relatively few finished artifacts being present. The importance of such local deposits is indicated by the spatial extent of the site and its apparently continuous exploitation from Oxbow complex times of Middle Plains culture through Late Plains culture and on into Period V.

Cosmology:

Little is known of Late Plains culture activities that can be attributed to cosmology. The word 'cosmology' refers to matters relating to the universe as an ordered whole and is preferred over the word 'religion' which has current connotations that are inappropriate. Unlike a formal religion like Christianity, for example, with its concern regarding the afterlife "The Indians pinned little hope to the uncertain hereafter. They sought from religion help and guidance in this present life alone, and with full consciousness of the limitations of their own knowledge and power, they summoned to their aid the mysterious forces surrounding them in order to obtain during their mortal span all the blessings that their hearts desired" (Jenness 1955: 167).

There is evidence from the rock art site of Writing-on-Stone in southern Alberta that Late Plains culture people were the first to use the site as a sacred place where shaman and personal powers could be acquired (Brink 1978). There is also evidence of Late Plains culture participation in the medicine wheel ceremonialism which began in Middle Plains culture times (Calder 1977). One aspect of Late Plains culture cosmology, the significance of which for the culture as a whole has been overemphasized, was the appearance of burial mound ceremonialism in the Dakotas (Neuman 1975). While the influences responsible for the burial mounds stemmed from the Hopewell mortuary complex many mound features were of local origin. There is no evidence of burial mounds west and north of the Dakotas and the mounds are best regarded as a geographically restricted Middle Missouri River drainage phenomena. In southern Saskatchewan and Alberta burials containing multiple bundle burials, provided with red ochre and a rich assortment of grave offerings, have been reported (Brink and Baldwin 1988; Walker 1982). Both of these burials pertain to the Pelican Lake complex. The scarcity of such burial sites in Late Plains culture would suggest that the historically documented practices of leaving bodies on scaffolds, in abandoned tipis, or otherwise exposed to the elements, was already in place and that in ground burial had been largely abandoned by Pelican Lake complex times. Other than the mounds in the Dakotas, no Besant complex burials are known.

The 600 BC Bracken Cairn burial in southern Saskatchewan (King 1961; Pendree 1980) was not professionally excavated and the description of the burial is based upon recall and some general notes that were made at the time. It consisted of the secondary burial of the remains of two adults and three infants (Walker 1982) who were placed in a pit along with a rich array of offerings. The deceased were covered with red ochre and the grave marked by a cairn of cobbles. The cairn, measuring approximately 3 m in diameter, was situated on a hill overlooking a river valley. Offerings consisted of bone spatulas, antler tine flakers or awls, a bear canine with an obliquely ground-off root, worked beaver incisors, three cups make from antler burrs, a drilled bird bone, perforated bone pendants made in the form of elk teeth, bone beads, freshwater clam shell gorgets and beads which are regarded as being exotic to the area, a Pelican Lake corner-notched projectile point, a drill of Knife River Flint, 3 end scrapers, 7 biface knives, 6 side (?) scrapers, 14 flakes, a ground stone pestle, a copper fragment, and a small quantity of limonite (Walker 1982). The limonite likely represents a decomposed iron pyrite nodule which would once have been used in a fire making kit. Also included in the grave were mandibles and maxillae representing nine swift fox (*Vulpes velox*) and the bones of Richardson's ground squirrel, beaver, meadow vole, bear, striped skunk, deer, pronghorn, bison, Canada goose, and crow. The symbolic significance of the animal remains is unknown but the pattern of placing animal parts with the deceased was widespread in the preceding Period III (e.g. Middle Plains, Middle Great Lakes-St.Lawrence, Middle Maritime cultures).

The related Highwood River burial site in Alberta (Brink and Baldwin 1988) was situated on the terrace edge of a level prairie overlooking a river valley and was the highest point in the immediate area. Ploughing and erosion had severely disturbed the burial and if a cobble cairn had once been present it would have been destroyed by the plough. It was possible to record the base of the grave which consisted of an oval pit 1.5 by 0.8 m outlined by red ochre containing some human bone stained with ochre. Burial and artifact contexts, however, were destroyed. Objects from disturbed contexts which are believed to pertain to the grave were a Pelican Lake complex projectile point, a large flake and core, a small rectangular sheet of copper, 4 shell beads, 1 olivella (*Olivella baetica*) bead, 2 dentalia (*Dentalium pretiosum*) beads, 3 worked shell fragments, 11 perforated grizzly bear claws, and 66 drilled bison deciduous incisors and canine teeth, predominantly from the left side of the mouth. The grave contents reveal the broad trade network in which Late Plains culture people participated. The dentalium and olivella shell beads were derived from the Pacific coast 800 km or more to the west, the Knife River Flint artifacts came from a source approximately the same distance to the southeast and if the native copper was obtained from Lake Superior it had to be transported 2,000 km from the east.

On the basis of the limited evidence, Pelican Lake complex burials in Canada may be characterized as being situated on prominent heights as isolated graves rather than occurring in cemeteries and, in at least one instance, a grave was marked by a stone cairn. The abundant use of red ochre, multiple secondary bundle burial, and a rich array of grave offerings including personal ornaments, are also typical. The Saskatchewan and Alberta graves shared the following grave offerings: a wide variety of bone and shell objects including perforated animal teeth and exotic shell ornaments; single pieces of native copper; and single corner-notched points.

Other burials in Montana and Saskatchewan have been dated to Period IV but none produced diagnostic tools. It has been suggested (Brink and Baldwin 1988: 131-132; Walker 1984: 148) that the burial pattern has its roots in Middle Plains culture, specifically the Oxbow complex. While agreeing that there are a number of correspondences there is, however, a substantial time gap between the Oxbow and Pelican Lake complexes. Limited burial information regarding the McKean complex from which Pelican Lake is here believed to have been derived is insufficient to identify origins at this time. There are specific correspondences with the Gray Burial site in southwestern Saskatchewan but this cemetery was used for 2,000 years until 1,500 BC (Millar 1978) and, therefore, the continuities could have involved unrecognized McKean complex or even early Pelican Lake complex burials in the cemetery (Wright 1995: 324).

Burial information relating to the Besant complex is limited to the burial mounds of the Middle Missouri River in South Dakota and North Dakota (Hewes 1949; Neuman 1975). Though it has been suggested that burial mounds appeared in southwestern Manitoba at this time (Reeves 1983: 12; Syms 1977: 88) the evidence for their presence has still to be demonstrated. It will, therefore, be necessary to limit discussion to the Dakota features. The small conical mounds, dating from 250 BC to AD 500, range from 16.8 to 30.5 m in diameter and from 0.4 to 2.1 m in height. Ovoid to rectangular subfloor pits, measuring 2.4 to 3.6 m by 1.8 m and 0.6 to 1.2 m deep, appear to be a local Middle Missouri River basin trait (Neuman 1975: Fig.8). Although undoubtedly a product of stimulus diffusion from the Hopewell mortuary complex to the east, the involvement of the western burial mound ceremonialism with Illinois Hopewell was not strong (Vehik 1983: 225). Multiple secondary burials and occasional articulated remains were placed in the central submound pit within a log crypt or covering that was frequently set afire. As was the case with the Malmo culture (Gibbon 1975) and Late Western Shield culture (Laurel) to the northeast (Kenyon 1971), grave offerings were usually not placed directly with the deceased but were distributed throughout the mound as it was being erected over the bodies. Also in common with the neighbouring and partially contemporaneous Malmo culture mounds, articulated bison skeletons and bison skulls were frequent mound inclusions. In the Boundary Mound 1 site, 18 bison skulls were included in the mound with one half of the skulls 'faced down' (Neuman 1975: 66), possibly some form of symbolic balancing of respect to both the Upper World and the Lower World, a commonly held view by native people described in the writings of European recorders (Jenness 1955: 168). Dismemberment and ritualistic preparation of the bones of the deceased for mound burial was practised as was the breaking off of the ends of longbones and the frequent representation of bundle burials by only the skull and the longbones. In these respects, the eastern Besant complex people treated the remains of their kinsmen in a manner shared with both their Malmo and Late Western Shield culture contemporaries. Mounds were built on the first terrace overlooking a river and might or might not be associated with a habitation site. Construction involved a single event, unlike some of the accretionary mounds encountered in the Rainy River region of Ontario-Minnesota, although single event mound construction is also known in Late Western Shield culture (Kenyon 1971). As a rule, between 32 to 13 disarticulated and partially articulated bundle burials and the occasional articulated body were placed in the mounds. It is apparent that only a small segment of the population was accorded mound burial as was the case with other cultures in North America who erected burial mounds. Exotic offerings included olivella and dentalium beads from the Pacific coast, conch shell, possibly from the Gulf of Mexico or the Atlantic coast, and obsidian from Wyoming. Other offerings to the deceased included shell and stone spearthrower weights, fossils and concretions, stone knives, scrapers, projectile points, a conical clay pipe and a pottery vessel, a range of bone items including split and ground bear canines, ground canid and bear maxillae, ground human maxillae and mandibles, the latter clearly reflecting Hopewellian influence. Red ochre was frequently used and the second most common pigment was a 'green sand' reminiscent of the green clay used in 1,500 BC Middle Great Lakes-St.Lawrence culture burials in the lower Great Lakes-upper St.Lawrence region. The latter substance may be equivalent to the white clay (marl) beds in some Middle Plains culture graves that is speculated to symbolize the Earth-Diver story of creation (Hall 1979). This version of the creation of the Earth and its inhabitants by a supernatural being was widespread across North America. Other pigments and metals present were magnetite, limonite that likely represents disintegrated iron pyrite strike-a-lights from fire making kits, and, in one instance, a ball of white clay coated with red ochre.

Judging from both projectile point 'offerings' and radiocarbon dates, Late Plains culture participated in the medicine wheel ceremonialism of the Northern Plains that began with the Oxbow complex of Middle Plains culture. This included involvement in ceremonial structures such as the Majorville Cairn (Calder 1977) with its 5,000 year record of use. Some have suggested that medicine wheels represent the perpetuation through time of the historically documented Sun Dance Ceremony. Of the approximately

50 recorded medicine wheels half are in southern Alberta. The features, constructed of boulders and cobbles, usually have from 4 to 28 spokes radiating from a central cairn or can be represented by cairns surrounded by concentric circles but lacking spokes. Medicine wheels are usually situated on the highest hills in an area. Different forms of medicine wheels likely relate to a range of different functions (Brumley 1988; Burley 1985) and it is only the accretionary forms represented by the Majorville Cairn and possibly the Moose Mountain medicine wheel in Saskatchewan (Dyck 1983) that are pertinent here. While it cannot be demonstrated, it is probable that medicine wheels were related to bison ceremonialism and specifically bison reproduction and the maintenance of the life cycle. Claims for the astronomical alignment of medicine wheels have been neither proved nor disproved (Ovenden and Rodger 1981). Indeed, the circular or polygonal configurations of the wheels, combined with a general lack of precision sighting, has and probably will continue to provide a rich field for both academic and amateur debate.

A most unusual cosmological site is the turtle effigy intaglio of the High Butte site that sits on a hill 60 m above the Missouri River floodplain in North Dakota (Wood and Johnson 1973; and Figure 85). One of the eight ovate depressions associated with the main feature produced only Besant complex artifacts. The turtle, the surrounding 8 ovate depressions, and the single crescentic depression, were created by removing the turf to create a depression only a few inches deep. It has been speculated that the ovate features represent 'symbolic' eggs. Curiously, the excavation of one of these 'eggs' exposed the remains of household activities that included grease rendering but nothing that could be interpreted as being ceremonial in nature.

Rock art sites are most common in southwestern Alberta and involve both etched petroglyphs and painted pictographs although the former are most common. The most famous site is Writing-on- Stone (Keyser 1977) where the earliest recognized cultural associations pertain to both the Pelican Lake and Besant complexes (Brink 1978: 117). Use of the same sacred site area by the two complexes reinforces the likelihood that they are early and late expressions of a single related cultural development and not the product of two separate cultural traditions. According to historical documentation, as places of concentrated supernatural powers rock art sites were potentially dangerous and most people would have avoided the areas.Both the nature of the Late Plains cultural debris at the Writing-on-Stone site and the limited hunting potential of the region reinforce a participation in supernatural rather than secular activities. As Pelican Lake complex materials are the earliest at the site it may indicate that this form of graphic power supplication was initiated by Late Plains culture. Other rock art, such as buffalo stones, ribbed stones, and, in fact, most petroglyph sites, rarely can be associated with a particular culture. At the Donovan site in northern Montana, however, (Keyser 1979:

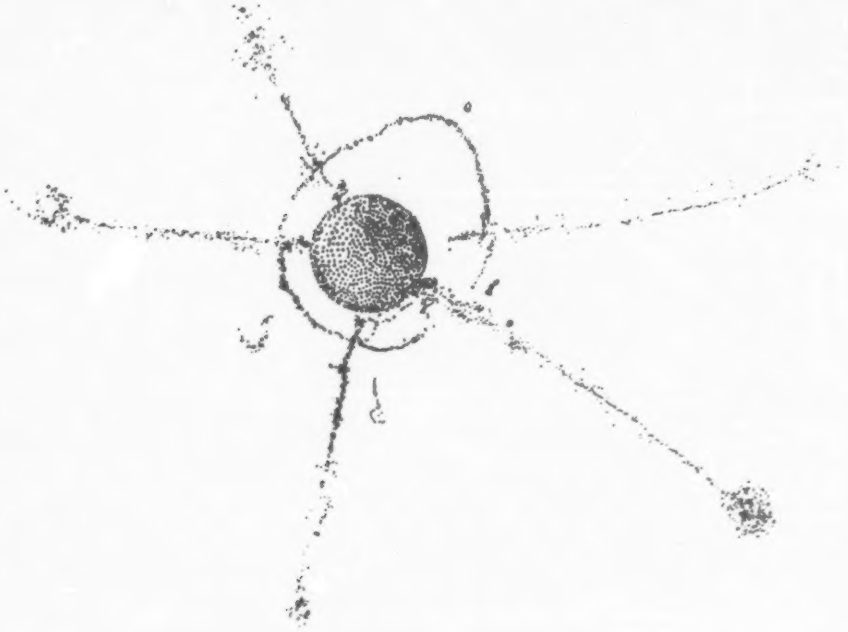

FIGURE 84: THE MOOSE MOUNTAIN MEDICINE WHEEL, SASKATCHEWAN This medicine wheel has been estimated to be 2,000 years old on the tenuous basis of projected changes through time of the summer solstice sunrise. There has been considerable controversy surrounding the use of some medicine wheels as astronomical sighting features. For discussion of this issue and information on other medicine wheels see Wright 1995: 320-324 and the pertinent references. (Reproduced from Kehoe and Kehoe 1979)

Fig.27) a boulder with petroglyphs may be associated with the major bison kill-processing occupation of the site by Besant complex peoples.

The exceptional Besant complex pound at the Ruby site in Wyoming (Frison 1978: 220) has already been commented upon in the section on **Settlement patterns** but the ceremonial structure associated with the pound is deserving of particular attention (Figure 86). This 12 by 5 m elliptical structure, demarcated by post moulds, was built beside the final drive lane into the pound entrapment surround. A line of five posts cut across the centre of the structure, dividing it into two equal parts with the southern half apparently being roofed as suggested by preserved rafters. Associated features were

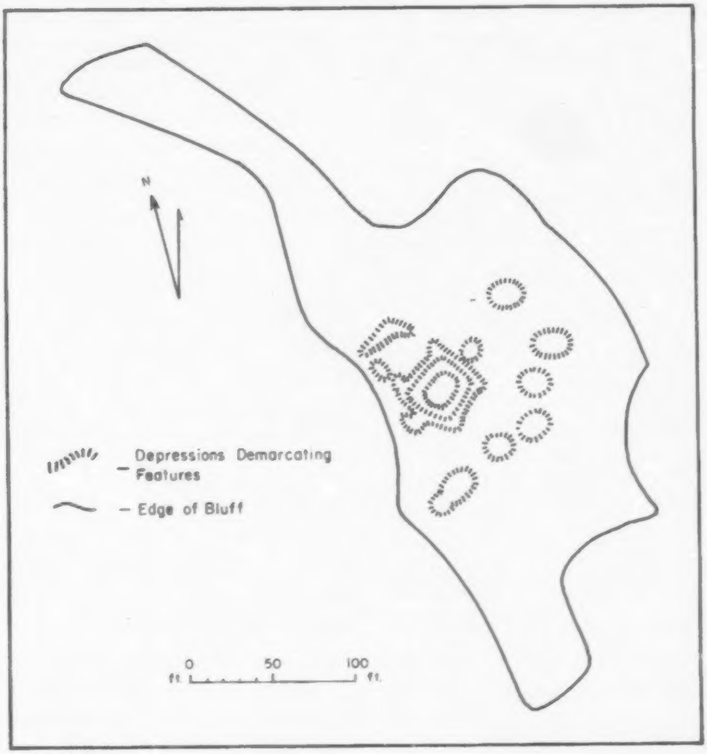

FIGURE 85: TURTLE EFFIGY INTAGLIO AT THE HIGH BUTTE SITE, NORTH DAKOTA The turtle form as well as the eight ovate depressions and one crescent shaped depression were created by removing the turf to a depth of only several inches. Situated on top of a hill overlooking the Missouri River Valley, the site is interpreted as being of religious significance. Besant complex materials were recovered from the site. (Adapted from Raymond and Johnson 1973: Figure 2. Drawing by Mr. David W. Laverie)

small holes containing bison 2nd and 3rd thoracic vertebrae and placed around the southern end of the structure were eight bull bison skulls lacking mandibles. Hearths or normal dwelling debris were totally absent. The structure has been interpreted as a shaman or pound priest ceremonial lodge within which he 'called' the bison into the trap with prayers and other ritual acts. Special lodges associated with pounds have been historically documented among the Plains Cree where the tipi of the poundmaker was also placed beside the angled entrance into the pound (Verbicky-Todd 1984: 43-45, 103).

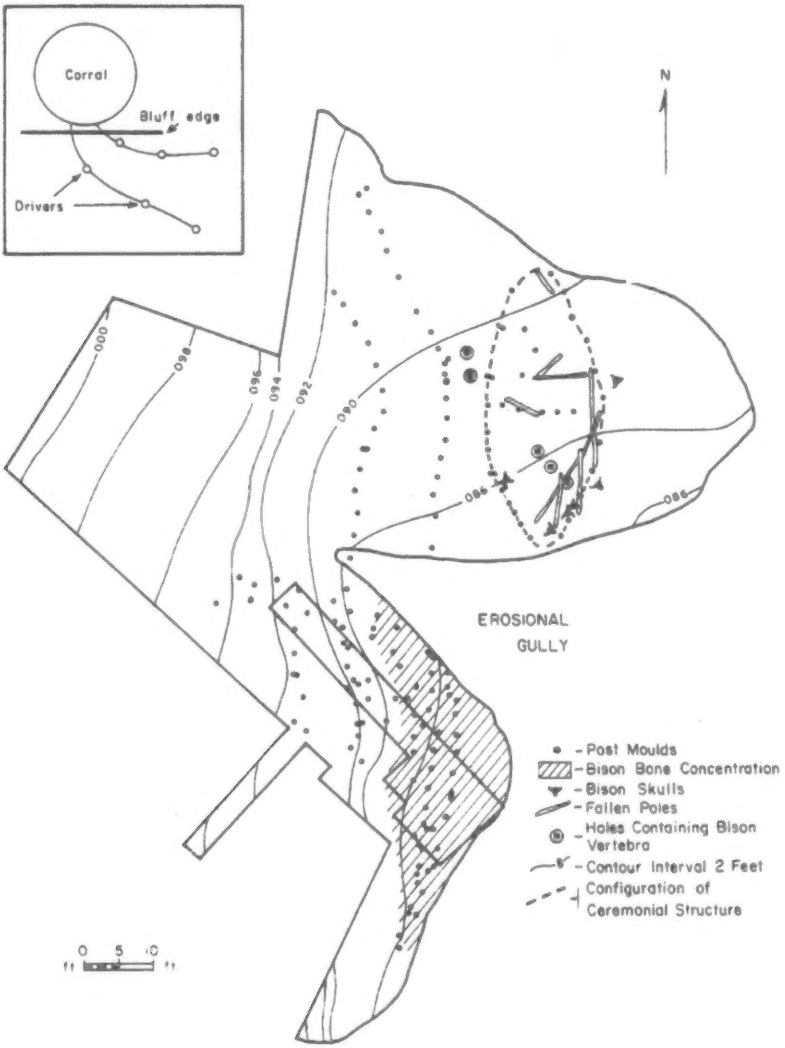
Corral
Bluff edge
Drivers
N
000
098
096
094
092
090
088
086
EROSIONAL
GULLY
• - Post Moulds
▨ - Bison Bone Concentration
▼ - Bison Skulls
- Fallen Poles
◉ - Holes Containing Bison Vertebra
- Contour Interval 2 Feet
Configuration of Ceremonial Structure
0 5 10
ft ft

FIGURE 86: THE RUBY SITE POUND AND ASSOCIATED CEREMONIAL STRUCTURE, WYOMING Historical documentation record shaman or pound priests who 'called in' the bison herd to the pound but this exceptional 12 by 5 m structure beside the entrance into a Besant complex pound is the first archaeological evidence of such a ceremonial structure. (Adapted from Frison 1978: Figure 5.39. Drawing by Mr. David W. Laverie)

Of probable cosmological significance is the number of projectile points manufactured from North Dakota Knife River Flint that are associated with Besant complex bison kill sites. This occurrence stands in contrast to the frequently low occurrences of the same flint at non-pound sites. At the Muhlbach site (Gruhn 1971), for example, 52 of the 61 projectile points were manufactured from Knife River Flint and 59 % of this total were complete suggesting that weapon tip retrieval in this instance may have been taboo. The scarcity of bison skulls (Ibid: 137) relative to the abundant evidence of butchering suggests that they were removed to some other locale, presumably for ritualistic purposes. Given that the Muhlbach site in Alberta is 1,000 km to the northwest of the Knife River Flint deposits, both the abundance of the exotic stone and the apparent lack of effort to retrieve intact stone tips is unusual behaviour unless ritually prescribed. Both traits appear to be typical of bison kill sites. The contrast in the relative frequencies of Knife River Flint on sites is perhaps best illustrated from Saskatchewan. At the Besant complex kill site of Melhagen (Phenix 1969) over 80% of the 57 projectile points were manufactured from Knife River Flint whereas at the Besant complex Grandora campsite (Dyck 1972) only four small flakes of this material were recovered. It would appear that for the Besant complex hunters the Knife River Flint held some particular ritualistic significance associated specifically with pound sites. The preceding speculation parallels the apparent ritualistic significance of western Onondaga chert to the Meadowood complex of Late Great Lakes-St.Lawrence culture between 1,000 and 500 BC (Chapter 23).

Application of native oral traditions to archaeological issues has been, until recently, a sadly neglected field of inquiry. It is noteworthy that major buffalo jump sites like the Old Women's (Forbis 1962) and the Head-Smashed-In buffalo jump sites (Reeves 1978a) are directly associated with the creation legends of the local Blackfeet people. Expanded communication between archaeologists and native elders would undoubtedly produce informative results.

External relationships:

In considering the relationship of Late Plains culture with neighbouring cultures it is useful to assess the impact of the Hopewell mortuary complex on the Besant complex. According to the hypothesis that two contemporary cultures occupied the Northern Plains, Pelican Lake and Besant, as opposed to the single developing tradition adhered to here, the Besant complex spread into the Plains from the east at the expense of the local Pelican Lake complex. This aggressive act is attributed to Besant's participation in the Hopewellian Interaction Sphere and a desire for economic control of certain valuable resources such as Yellowstone obsidian in Wyoming, Knife River Flint in

North Dakota, and bison products (Reeves 1970: 173). Not only is such economically driven imperialism most unusual for hunting societies but there is little evidence to support such an event. In fact, there is more evidence of Late Plains culture trade involvement with the Rocky Mountains and the Pacific coast than with the Midwestern United States. Western products that do occur in the Midwest, such as obsidian and Knife River Flint, simply reflect the maintenance of trading patterns established during Period III. Knife River Flint on Hopewell sites is relatively scarce, being most frequently represented on sites in southeastern Wisconsin (F. Clark 1984: 177). An absence of Knife River Flint in Kansas City Hopewell sites indicates that the material was not moved down the Missouri River but rather, across Minnesota and overland to Wisconsin in the form of large biface knives and scraper blanks. This, in turn, suggests that Malmo culture in central Minnesota and possibly Late Western Shield culture (Laurel) were acting as the major middle men in the trade into Hopewell country. The more common occurrence of Knife River Flint on Late Western Shield culture sites compared to Malmo sites and the greater frequency of primary flakes suggests that Late Western Shield culture actually had "...a more direct access to the source" than the Malmo culture (F. Clark 1984: 183). It is speculated that at least some of the Knife River Flint objects from southeastern Wisconsin Hopewell sites actually arrived via Late Western Shield culture traders using the Boundary Waters route into Lake Superior and thence southward along the Lake Michigan coast.

The relationship of the Pelican Lake complex to Late Western Shield culture is still poorly understood. Certainly the presence of native copper in Pelican Lake complex graves and Knife River Flint objects in Late Western Shield culture sites indicates that exchange was taking place. Knife River Flint is relatively common on Pelican Lake complex sites in southern Manitoba and Saskatchewan suggesting close connections with the south (Buchner 1982: 113; Reeves 1970: 161). Both of these regions of the Canadian Plains are relatively close to the North Dakota quarry sites and with convenient interconnecting water routes available. The use of Gunflint Formation chert from Lake Superior by the Pelican Lake occupants of the Long Sault site on the Rainy River (Arthurs 1986)also indicates cultural contacts. Stratigraphic evidence from southeastern Manitoba clearly reveals that the Pelican Lake complex (Larter) replaced the Middle Shield culture towards the end of Period III and, in turn, was replaced by Late Western Shield culture in Period IV (Buchner 1979). The shifting relationship between plains and forest peoples in this region of Manitoba, adjacent Ontario, and northwestern Minnesota represents one of the most interesting areas in North America for the study of culture contact situations, ecological adaptations, and the impact of climatic change on the changing distributions of cultures with presumably somewhat different adaptations. Responding to a climatically induced westward retreat of the Grassland and the bison herds, the Pelican Lake complex shifted westward as well. Westward expanding Late Western Shield culture not only occupied the former Pelican Lake territory but eventually spread into the Parkland of Manitoba. Such an event suggests that there may have been some push behind the Late Western Shield culture expansion. People from the Boundary Water region were more numerous and possessed a more complex social system than either their western neighbours or the majority of Late Western Shield culture societies. They also possessed the bow and arrow and, thus, initially a weapon advantage in any conflict. Others would argue that there is evidence that the Pelican Lake complex had the bow as early as 2,000 BC (Dyck and Morlan 1995). Changing climatic circumstances would have also favoured the westward spread of wild rice, a storable food probably as basic to the Late Western Shield culture economy as pemmican was to the Late Plains culture economy. The suggestion that Late Plains culture may have been, in part, forced out of its eastern territories is supported by the fact that the people were well adapted to the forest as well as the Parkland and Grassland, albeit, in the former instance, likely on a seasonal basis. The Pelican Lake complex occupation of the Caribou Lake region of southeastern Manitoba (Buchner 1979: 21), for example, is more than 40 km east of Lake Winnipeg in a region that would have been well within the Boreal Forest at 1,000 BC (McAndrews et al 1987). Settlement pattern evidence clearly indicates that the sequential Middle Shield, Late Plains (Pelican Lake), and Late Western Shield cultures occupied the same sites and presumably exploited the same resources. Curiously, there is little direct evidence of Late Western Shield culture relationships with either the Pelican Lake or Besant complexes other than the relatively common occurrence of Knife River Flint and some obsidian on sites in the Rainy River region of Ontario and Minnesota. Contact situations would have potentially been most intense from 200 BC on and yet there is relatively little evidence of Besant complex influence on eastern sites. Exceptions are the Pelican Lake and Besant style projectile points, some in Knife River Flint, placed in a burial mound on the Rainy River as well as probably some of the simple plain and cord-impressed pottery from the mound (Kenyon 1971). It is also apparent that the Armstrong Mound on the Rainy River shared a number of quite specific burial traits with the burial mounds of the eastern Besant complex.

Native copper items on Besant complex sites in North Dakota and South Dakota (Gregg 1987: 269; Gregg et al 1987) are more likely to indicate Late Western Shield culture trade reciprocity rather than any involvement of the former in the Hopewellian Interaction Sphere. Studies of Knife River Flint use suggest that it was most intensively exploited between 1,500 BC and AD 500 (Picha and Gregg 1987: 201). In any trade network kinship links established through intermarriages would provide obvious advantages. This kind of social relationship appears to have existed between Late Western Shield culture and its eastern neighbours in the Great Lakes-St.Lawrence River area. Both Late Western Shield culture and eastern elements of the Besant complex produced pottery vessels, presumably manufactured by women, and thus the appearance of pottery typical of either culture on the other's sites could reflect intermarriage. Late Western Shield culture pottery has been identified on Late Plains culture and even Period V Plains culture (Avonlea complex) sites (Klimko 1985; MacNeish and Capes 1958; Meyer 1983a) but these plain, bossed, coil constructed vessels are more appropriately regarded as a local Plains pottery style. Similar pottery has been found on Besant complex sites in the Dakotas (Neuman 1975; Swenson 1987). The evidence for pottery attributed to Late Western Shield culture (Laurel) from Besant complex sites in southeastern North Dakota (Gregg and Kordecki 1987: 35 & 50; Schneider 1982) is not convincing. Similarly, the pottery associated with the Besant complex at the Avery site (Joyes 1970) and the United Church site (MacNeish and Capes 1958) in southwestern Manitoba and attributed to Late Western Shield culture is more appropriately assigned to the Plains Woodland pottery tradition. Both of the foregoing sites contained hopelessly mixed multiple components and their cultural horizons were reconstructed using typology and not stratigraphy or archaeological context (Joyes 1970: 209-210). The sites are regarded as Besant complex occupations and contain simple, plain, punctated pottery which actually bears little resemblance to Late Western Shield culture plain wares (personal examination of collections in the Canadian Museum of Civilization). There has been a tendency to classify plain, coil constructed pottery in southwestern Manitoba and in areas of Saskatchewan as pertaining to Late Western Shield culture (Badertscher 1982; Hill 1985; Klimko 1985; Meyer 1983a; Reeves 1974a) despite the existence of a basically similar pottery style in the local Besant and Avonlea complexes. Even along a convenient transportation route like the Saskatchewan River, with Late Western Shield culture occupying the lower reaches of the river where it flows into Lake Winnipeg and Late Plains culture occupations upriver in the Nipawin region, there appears to be little clearly recognizable interaction. Pottery from the latter region attributed to Late Western Shield culture (Burley et al 1982: 80; Meyer 1983a) is not only sparse but is more likely to pertain to the local Avonlea pottery complex. Cultural replacements did take place at sites like the Pas Reserve on the Saskatchewan River in extreme western Manitoba (Tamplin n.d.) where the Period V Avonlea complex occurs stratigraphically above the Late Western Shield culture (Laurel) occupation. The only convincing evidence of Late Western Shield culture pottery in Saskatchewan comes from the Sturgeon-Weir and Churchill rivers north of the Saskatchewan River (Meyer 1983a).

It is impossible to achieve a balanced view of Late Western Shield culture and Late Plains culture relationships since much of the exchange was probably in perishable objects like furs, bison hide shields, and food products like parched wild rice and pemmican. Given that both cultures were involved in exchange it is surprising to note the scarcity of Besant complex traits in the former Pelican Lake complex territories of southeastern Manitoba and adjacent Ontario and Minnesota. Similarly, there is no evidence that Besant people ever shared in the Late Western Shield culture occupation of the Parkland along the banks of the Red River in Manitoba. The following may suggest that there was a hostile relationship between the two cultures that required a no-man's land as a territorial buffer. And yet, goods were exchanged; possibly by the silent barter method. Ideas were also exchanged since it is quite probable that the Besant people acquired the bow and arrow technology from Late Western Shield culture. As with Shield culture, acquisition of this weapon system from Palaeo-Eskimos on the central Labrador coast and northern Gulf of St.Lawrence, however, the technology transfer may not have been friendly. In other words, the bow and arrow technology may have been obtained by Late Plains culture on its eastern flank as a product of "...intergroup contact and competition" (Blitz 1988: 137).

To the west in Alberta, Late Plains culture is found mainly in the Grassland, Parkland, and Foothills of the southern half of the province with a 'sprinkling' of sites north into the Boreal Forest on the Athabasca drainage (Vickers 1986: Figs.14 and 15). In Saskatchewan Pelican Lake points have been noted as far north as Lake Athabasca (Meyer 1983: Fig.11.8) although such points likely came into Saskatchewan from adjacent Alberta (Wright 1975: 122) to judge from their absence along the Churchill River drainage to the south (Meyer 1983: 159). Given the looseness of the point typology definitions of both the Pelican Lake and Besant complexes there is also the possibility that some of these northern corner-notched and side-notched projectile points have nothing whatsoever to do with Late Plains culture. Late Plains culture as an integrated assemblage and not stray projectile points did not extend north of the Athabasca drainage to any significant extent (Donahue 1976; Vickers 1986). With reference to northern Alberta in general, "While specific Plains influences may be substantiated ultimately, present evidence for this is not convincing" (Ives 1985: 38). It is beginning to look like the Foothills occupation of the North Saskatchewan River southward pertains to Plains cultures (Ronaghan 1986: 287) while the Peace River Foothills region relates more to Late Plateau culture. The Athabasca River Foothills contain a mix of both Late Plains and Late Plateau cultures. There does not appear, however, to be adequate grounds for regarding the Alberta Rockies as a culture area distinct from either the Plains or the Plateau (Reeves 1974a: 21).

In the Boreal Forest, the neighbours of Late Plains culture would have been Late Northwest Interior culture (Taltheilei complex) that occupied much of the region from 700 BC onward (Gordon 1996). The origins of Taltheilei complex are still uncertain but are believed to lie somewhere to the west in northern British Columbia. There is no evidence of contacts between Late Plains culture and Late Northwest Interior culture in Saskatchewan (Meyer 1983) but there is a report of a tentatively identified Besant complex projectile point on an 500 BC Late Northwest Interior site in the Birch

Mountains of northeastern Alberta (Ives 1977). On the tenuous basis of point typology, the Pelican Lake and Besant complexes have been identified in the southern Northwest Territories immediately to the east of Great Slave Lake but with the qualification that "It is likely these points were carried north by Beverly hunters who had met over-wintering Plains hunters taking bison in the aspen parkland/forest transition" (Gordon 1996: 145).

In the Jasper Park region of the Foothills of the Athabasca River drainage there appears to be a complex mix of Plains and Plateau cultures. Late Plains culture materials are abundant, but a range of stemmed and corner-notched points, microblades, and Mount Edziza and Anahim Peak obsidian from British Columbia, are also reported (James 1986). Unfortunately most of these materials have not been recovered from clear archaeological contexts. The Mount Edziza and Anahim Peak obsidian sources are 950 and 480 km, respectively, from the Jasper area. In contrast, to the south in the Banff National Park area, where Late Plains culture is also well represented (Christensen 1971), the presence of Wyoming and southern British Columbia obsidians suggests the two regions participated in somewhat different trade networks although the presence of small amounts of Knife River Flint and Banff chert in Jasper indicates some contacts. The stemmed projectile points, microblades, obsidian and basalt of the Patricia Lake site in Jasper National Park are attributed to a Plateau occupation between 2,500 BC and AD 800 (Pickard 1986: 130). Another view holds that "The Middle and Late Prehistoric, represented by stemmed and notched atlatl and arrow points, has a definite 'Boreal Forest' or Interior B.C. aspect" (Reeves 1974a: 13) and that the Boreal Forest and Plateau affinities in the Jasper region appear to pertain to the period from 5,500 BC to AD 400 (Anderson and Reeves 1975: 95). Further north, in the Grande Cache area of the Smoky River of the Peace River Foothills (Brink and Dawe 1986), most of the archaeological evidence appears to pertain to the Plateau rather than the Plains although the context and chronological control of the evidence is poor. The dispersed settlement pattern of the north, with the extensive use of lake shores, is quite distinct from southern settlement patterns. There is no evidence from this region during Period IV of interaction with Late Plains culture. Rather the distribution of a high quality black chert of unknown source throughout northwestern Alberta and northeastern British Columbia (Brink and Dawe 1986: 239) suggests a regional development distinct from that to the south. Sourced obsidian in the Peace River area all pertains to the Anahim Peak region of British Columbia. Although it has been suggested that Late Plains culture is present in the Grande Cache area along with the entire Plains sequence (Brink and Dawe 1986: 241) the basis for the typological cultural identifications are tenuous. An absence of pictographs and petroglyphs, medicine wheels, and other southern Plains traits in the Foothills north of the Bow River of the South Saskatchewan River drainage may represent a discontinuity in belief systems between the northern and southern Foothills

(Ronaghan 1986: 288-289). Plateau culture did manage to penetrate the southern Foothills as indicated by pit house sites in Banff and the upper Red Deer River (Ronaghan 1986: 289).

Human biology:

Evidence pertaining to human biology is limited to the skeletal remains from the South Dakota and North Dakota Besant complex burial mounds (Bass and Phenice 1975; Williams 1985) and two Pelican Lake complex burial features from Saskatchewan and Alberta (Brink and Baldwin 1988; Walker 1982).

The 600 BC Bracken Cairn burial in Saskatchewan (King 1961) contained an adult man and woman, the left femur of another adult, and the remains of two infants (Walker 1982). This curious phenomena of an additional left femora being included with complete burials also occurred at the unrelated 1,500 BC Middle Great Lakes-St.Lawrence culture (Glacial Kame mortuary complex) Finlan site near Trenton, Ontario (Wright 1995: 253) and the 13th century Ontario Iroquois tradition Bennett site (Wright and Anderson 1969: 13). At the Finlan site, the femora were only represented by the proximal halves, both of which had been subjected to modification, while at the Bennett site two femora from different graves were for the most part complete. In both regions, the symbolic significance of additional human left femora being placed in a grave is lost forever. The Bracken Cairn male was estimated to be between 44 and 54 years of age, the female between 36 and 46, and one of the infants was a near-term fetus. An unusual pathology of one of the adults affected the sternal end of the right clavicle and the associated manubrium edge and is speculated to have been the result of an aneurysm of the aorta resulting from cardiovascular syphilis. Pressure from this syphilitic aortic aneurysm also modified the 2nd and 3rd thoracic vertebrae. It is likely the aneurysm ruptured causing the individual's death. The only other pathology noted was a impacted third mandibular molar. Generally the teeth of both adults were in excellent condition but worn flat through attrition (Walker 1982).

At the related 900 BC Highwood Burial site in Alberta (Brink and Baldwin 1988) the incomplete remains of a 10 year old and an infant are reported. The infant remains were so incomplete that they may have been accidentally scooped up from the original scaffold burial site along with the child's remains. These individuals were too young and incomplete to provide information pertinent to human biology.

The only significant human skeletal sample to be recovered from Late Plains culture sites pertains to the Besant complex burial mounds of South Dakota. Skeletal remains from the Grover Hand, Swift Bird, and Arpan mound sites (Neuman 1975) were analyzed by Bass and Phenice (1975) and the age of death and gender information from the Grover Hand Mound 1 and Mound 2 are given on Table 17.

	Mound 1		Mound 2	
Age in years	f	%	f	%
Birth to 2	11	25.6	2	9.5
3 to 6	14	32.6	2	9.5
7 to 12	2	4.7	4	19.1
18 to 21	3	7.0	3	14.3
22 to 30	3	7.0	3	14.3
31 to 40	5	11.6	1	4.8
Over 41	5	11.6	6	28.6
Totals	**43**	**100.1**	**21**	**100.1**
Male	14	58.3	11	64.7
Female	9	37.5	6	35.3
Indeterminate	1	4.2	-	-
Totals	**24**	**100.0**	**17**	**100.0**

TABLE 17: BESANT COMPLEX MORTALITY PROFILES FROM SOUTH DAKOTA
Age of death and gender are derived from Mounds 1 and 2 of the Grover Hand Mound site (Bass and Phenice 1975: Tables 10 and 11). Mound 1 had an unacceptably late radiocarbon date while Mound 2 had an acceptable date of AD 300 (Neuman 1975). Discrepancy between the two data sets presumably relate to an inability to determine sex in the very young although it is curious that there is no 13 to 17 category in the mortality profile. The single "indeterminate" in the gender portion of the Table is assumed to have pertained to an adult individual.

Allowing for cultural factors determining who was and was not provided with secondary mound burial, there appears to have been a high subadult mortality rate as represented by over 60% of the individuals in Mound 1 and nearly 40% in Mound 2. There also appears to be some favouring of secondary mound burial for adult males over adult females although a number of the gender identifications were classified as tentative. While the Mound 1 mortality profile, with its high subadult mortality, conforms with other evidence from the Plains, Mound 2 does not. The evidence is simply too limited to come to many conclusions although the discrepancy in the presence of adult males to adult females would suggest a cultural factor favouring male secondary mound burial.

A similar bias was noted in the mound burials of the Late Great Lakes-St.Lawrence culture Serpent Mounds site on Rice Lake, Ontario. There was a tendency to select the larger bones for secondary burial in the Grover Hand mounds. Red ochre was frequently applied to the skull and longbones. Cut marks were common at developed muscle and ligament points of attachment, including the mandible, indicating dismemberment and defleshing. Ribs were snapped off the vertebral column and one adult male had cut marks to the skull that were suggestive of scalping. The Grover Hand Mound site population were longheaded, robust, and tall with men averaging 173 cm and women 163 cm. Discrete trait skeletal attributes suggest the presence of genetically related people in the same mound. Periostitis infection of the tibia was common but was less frequently found on the femur and fibula. Spinal and radius arthritis also occurred as did minor evidence of mechanical injury. In general, people under 30 years of age had excellent dental health while 81% of those over this age suffered from abscesses and lost teeth. Mandibular teeth appear to have been more subject to pathology than maxillary teeth.

Evidence from the Swift Bird Mound site, with Mound 1 dated to AD 200 and Mound 2 to AD 400 (Neuman 1975), suggested "...a fairly impressive morphological heterogeneity..." (Bass and Phenice 1975: 125). Twenty-three or 40% of the individuals from the Swift Bird site had been subjected to dismemberment. While there were no females in Mound 1, none of the women in Mound 2 exhibited signs of dismemberment in contrast to 80% of the males from Mound 1. Over 30% of these individuals suffered from pathological conditions ranging from a possible case of acquired tertiary syphilis to osteoarthritis, mastoiditis, and otitis media. There were also some individuals with virtually every bone in their body being affected by periostitis suggesting debilitating massive infection. Obviously the very ill were cared for in this society until they died of their ailments. This, in turn, is evidence that there were sufficient resources and sedentary settlement situations to permit prolonged care of invalids without jeapordizing the survival of the family or band as a whole.

A possible case of parasitic infection by canid tapeworm (*Echinococcosus granulosus*) from a southeastern North Dakota mound burial dating between AD 460 and 865 is pertinent to Late Plains culture (Williams 1985). Indeed, the infection has been frequently identified in recent times among native peoples on the Northern Plains. This fatal condition can be transmitted to humans by such means as dogs licking faces or from drinking contaminated water. Physical evidence of the infection is rare but occasionally appears as a bony cyst that encases the parasite as was the case with the North Dakota individual.

While the Besant complex mound builders of the Middle Missouri River region of the Dakotas were bison hunters, it cannot be assumed that their appearance and condition was typical of all Late Plains people. The foregoing information is merely suggestive. The scarcity of Pelican Lake complex skeletal materials and the absence of Besant complex remains except in the Dakotas are evidence that inground primary or secondary burial was rarely practised throughout Period IV otherwise one would anticipate more accidentally exposed graves.

Inferences on society:

It was during Late Plains culture times that earlier practices, such as communal bison hunting and pemmican production, achieved a level of development which would come to characterize life on the Plains as observed by Europeans in the 18th and 19th centuries. The requirements of communal bison hunting made it mutually advantageous not only for bands to temporarily coalesce as tribes but also for individuals to subject themselves to the 'policing of behaviour' required by communal hunts (Arthur et al. 1975: 40; Reeves 1970: 172). Such tribal hunts, speculated to have involved concentrations of between 1,000 and 2,000 people, have led to the suggestion that "The complexity of the operations involved in a major bison drive at a site such as Head-Smashed-In would suggest that pan-societal sodalities of some type would be required to manage and direct the group activity" (Reeves 1983: 188). It has also been suggested that "Bands incorporating non-kin may have replaced extended families as the largest social unit" (Forbis 1992: 55), thus making it easier to assert control over individual behaviour during the communal hunt by vesting temporary authority in certain individuals and groups. The suggestion that mound burial in the Dakotas meant that the Besant complex, as a whole, participated in a status structure lacking among Pelican Lake complex peoples (Reeves 1970: 172) is not supported given the marginal nature of burial mound ceremonialism participation by Besant complex people. It is also far from clear what social role such mounds played relative to individual or, more likely, hereditary lineage status. It is agreed that "The fluid organization of recent hunters has certain adaptive advantages, including the adjustment of group size to resources, the levelling out of demographic variance, and the resolution of conflict by fission. These features are independent of the effects of acculturation and would have been no less adaptive in precontact situations" (Lee and DeVore 1968: 8). It does not necessarily follow, however, that band organization was composite rather than patrilocal (Reeves 1983: 188). Inter-band marriages could establish adaptive flexibility by extending the social security network while, at the same time, maintain male sedentariness relative to females enhancing the adaptive strategies of male cooperation and territorial familiarity required by the hunt.

Innovations and the florescence of earlier practices must have had an impact on social relationships. The bow and arrow was introduced to Late Plains culture from the east, probably from either Middle Shield culture late in Period III or Late Western Shield culture (Laurel) but did not replace the spearthrower until around AD 500. While it has been suggested that "The bow has specific advantages in situations of intergroup conflict, which may arise under conditions of competition for resource territories" (Blitz 1988: 135), the slowness of the bows' replacement of the spearthrower and the lack of significant evidence of territorial expansion by bow-users at the expense of spearthrower-users suggest other factors were at work. The loss of hunters to warfare would have been potentially harmful to all hunting societies. Further, hunting societies unlike horticultural ones, generally do not possess the economic base to wage significant territorial wars for resource or territorial acquisition. An exception to the foregoing would be contemporary Late West Coast culture (Chapter 28) where the development of status inequality and slavery based upon surplus food production provided both the economic base and the need for major acts of aggression. The exceptional abundance of food resources along the West Coast, particularly salmon, in conjunction with efficient harvesting and preserving techniques, permitted people to behave more like farmers than hunters and fishermen. Cultural shifts do take place, such as the contraction of Late Plains culture from its eastern territories and the reoccupation of the region by Late Western Shield culture people, but a number of factors in addition to the bow appear to have been at work such as the westward contracting Grassland and their bison herds. The importance of pemmican production in Late Plains culture, associated with the increased efficiency of the communal bison hunt, would have been a factor requiring social adjustments to accommodate stress associated with even temporary large aggregations of people. This labour intensive activity was traditionally carried out by women but since time would have been of the essence in processing the large quantities of meat resulting from communal bison kills it can be assumed that there would be some crossing of the division of labour by men, at least on a temporary basis. The florescence of communal bison hunting by 1,000 BC has been attributed to the perfection of pemmican food storage (Reeves 1990) even though the process was likely practised by Early Plains culture people as far back in time as Period II (Walker 1992).

There has been some attempt to associate tipi ring size with status and wealth differences in Late Plains culture (Kehoe 1960; Reeves 1990) but the proposal has not been supported by recent research (Wilson 1983a). At the Ross Glen site in southeastern Alberta two discrete clusters of tipi rings were interpreted as representing two cooperating

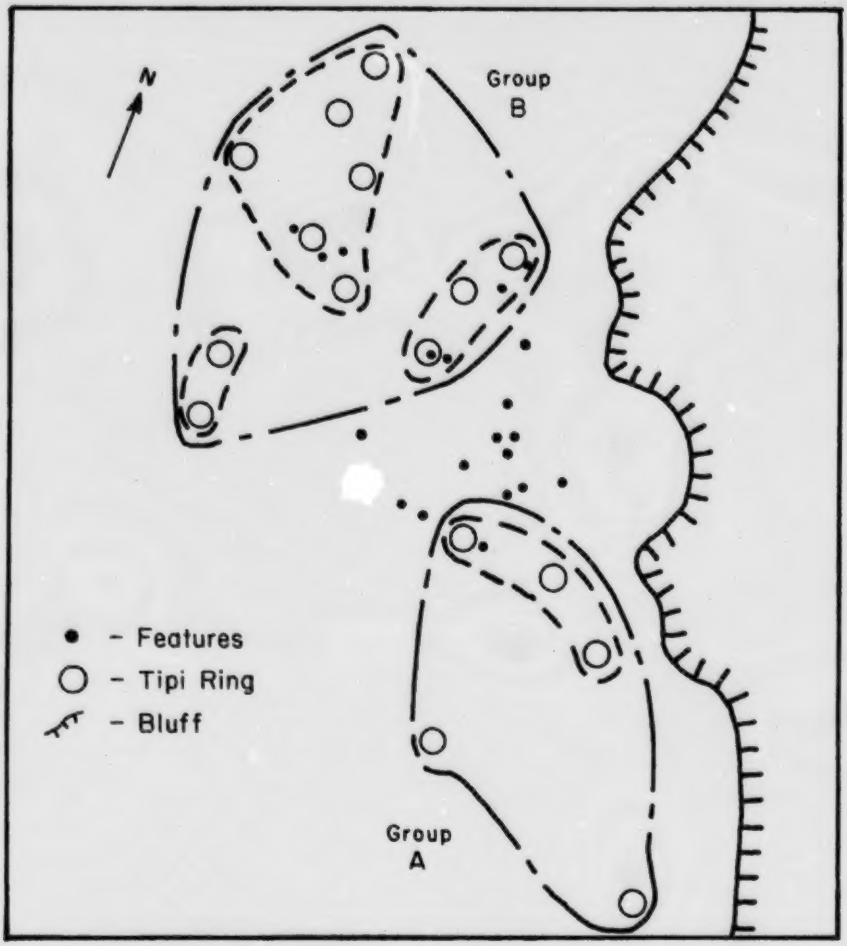

FIGURE 87: SETTLEMENT PATTERNS AT THE ROSS GLEN SITE Situated near Medicine Hat, Alberta, the contemporary tipi rings of this Besant complex site were arranged in distinct clusters with an intervening open air activity centre. (Adapted from Quigg 1974: Figures 3 and 4. Drawing by Mr. David W. Laverie)

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bands. It was further speculated that tipi ring size reflected status-wealth differences (Quigg 1983: 318). The absence of differences in the surviving material culture from these various sized tipi rings, however, does not support arguments of wealth differentiation. Tipi ring size likely reflects the family make-up of the individual tipis rather than being any significant indicator of wealth differences per se. On the other hand, the ability to support a larger family grouping could reflect hunting ability and an associated elevated status. Larger tipis would also require additional dogs for transportation and therefore more dog food.

It has been proposed that the acquisition of exotic objects through trade functioned as a means to acquire individual status within an egalitarian society (Driver 1993: 51). Trade, likely involving intermarriage between bands, would also help to stabilize social and economic relationships with neighbouring people. Gift exchange as a contract between individuals and groups was likely a far more important consideration than any personal desire to simply possess certain exotic objects. Trade would not have been a simple economic transaction between individuals but should be viewed relative to its social significance to the society as a whole. Of course, the individual or group who achieved an important political goal through negotiations and gift exchange would acquire prestige.

In summary, despite the florescence of communal bison hunting and pemmican production the social changes from Middle Plains culture to Late Plains culture appear to be more changes of degree than of kind. Given the relatively limited archaeological visibility of much of the Middle Plains culture archaeological record it is perhaps best not to place an overemphasis upon the differences seen in the much richer archaeological record of Late Plains culture.

Limitations in the evidence:

The archaeological record from the Northern Plains has many advantages over adjacent regions. Bone preservation is generally good and site visibility is often heightened by the bone concentrations of mass bison kills. Some accuracy in predicting the location of sites is possible as they are closely keyed to bison behaviour. Stratified sites on river bottoms and at the foot of slopes are relatively common. Stone features, such as tipi rings, bison pound alignments, medicine wheels and cairns, are often visible from the surface. Archaeological visibility, enhanced by the lack of ground cover, however, has resulted in the destruction of sites by bizarre economic activities such as the mining of bison jump sites during the last two World Wars for bone fertilizer (Forbis 1962) or looting by relic collectors (Reeves 1978a). As elsewhere, much of the archaeological evidence occurs as a thin veneer of scattered stone flakes and fire cracked rocks. Of the 3,314 sites reported from the Alberta Foothills, for example, only 260 or 8% could be assigned to a chronological period on the basis of diagnostic artifacts (Ronaghan 1986: 290). All too often, particularly in archaeological mitigation work, the chronological position of a site is determined by radiocarbon dates in lieu of diagnostic implements or clear archaeological associations (e.g. see Brumley and Rushworth 1983). Although Period IV was not subjected to as severe erosional and depositional cycles as the preceding periods these forces have still destroyed or deeply buried sites. Inappropriate farming practices in the early 20th century resulted in the destruction of innumerable archaeological sites by wind erosion. As in other regions, dams constructed for energy, irrigation, and flood control have taken their toll as have other economic activities ranging from road construction to surface coal strip mining. Recently most of these destructive activities are being mitigated, to varying degrees, by archaeological intervention as required by provincial legislation.

There have been some problems with the way in which the archaeological data base has been treated. There is still a tendency to rely too heavily on projectile point types in reconstructing culture history and to equate changes in projectile point styles with population replacements rather than technological diffusion or internal cultural change. As has been noted, "... projectile point types have obtained an entirely unwarranted status..." and have "...resulted in the creation of projectile point cultures" (Reeves 1983: ii). The economic base of the pre-European hunters of the Plains would not have permitted the kind of predatory and militaristic practices typical of the pastoralists of the Asiatic steppes. In the latter instance, grazing land was critical for the domesticated animals that formed the economic foundation of the pastoralists. Yet much of Plain culture history is still premised on assumptions of pastoralist-like behaviour. The direct and indirect impact of Europeans on the cultures of the Plains, with the horse coming from the south and firearms from the east, the introduction of European disease and a market economy, and the intrusion of displaced eastern native peoples, created a level of cultural disruption and suddenness of change that was unknown to the dog-nomads of pre-European times. As such, analogies drawn from European documentation must be used with considerable caution when making cultural extrapolations to the pre-European situation. Historically documented nomadism was largely a product of the horse-bison dispersal-bison chase pattern (Morgan 1979) and cannot be equated with the far more constrained mobility of the preceding dog-nomadism and bison entrapment patterns.

Another limitation in the interpretation of the evidence is the great weight that is often attached to radiocarbon dates as chronological indicators and, thus, culture determinants. This weighting of the significance of radiocarbon dates is applied despite contrary evidence from the numerous stratified sites and single component buried sites. In addition to the already mentioned reliance upon projectile point types for interpretations, is a related reliance upon single or limited artifact attributes to draw conclusions. An example of this problem is the acceptance of plain, coil constructed, interior and/or exterior bossed pottery vessels as being introduced from Late Western Shield culture (Laurel) even though such pottery very likely represents a minority ware within the local pottery tradition. Further, other eastern traits are totally lacking. This tendency to look outside of the Plains area for foreign influences, such as the hypothesized impact of the Hopewellian Interaction Sphere, however, appears to be on the wane. Along with a reliance on projectile point types and radiocarbon dates to establish chronologies and determine the contemporaneity of cultures there is also a tendency to ignore or minimize the impact of component mixture on interpretations even when such contamination is readily apparent at sites such as the Morkin site in Alberta (Byrne 1973). This practice throws into doubt the cultural contexts of many radiocarbon dates (Morgan 1979: 389-390; Syms 1977: 93) and has introduced an unacceptable level of noise into the culture history reconstructions. 'Noise' is used here in sense of the linguist as anything that interferes with human comprehension. Such noise, frequently exacerbated by the use of secondary sources, is responsible for much of the lack of agreement regarding Northern Plains systematics (see Reeves 1985). In brief, classifactory systems are essentially based upon projectile point types with all of their subjective limitations. A much debated and in my view fruitless trend has been the mind-games involved in the creation of simplistic, pseudo-theoretical dichotomies which see the need for a hypothetico-deductive approach using explicit research designs as opposed to an inductive approach with its assumption of the self-generation of knowledge (Burley 1985). It would appear to this 'outsider' that the overriding limitations in the archaeological record of the Northern Plains are interpretational rather than any inherent weaknesses in the data base. A culture history premised predominantly on point styles, radiocarbon dates, and population replacement and/or joint territorial occupations by two unrelated cultures, simply has too many holes in its make-up to accommodate the exceptionally rich body of evidence. A suspected factor in this situation is the one-to-one equation of the mobility and population shifts of the historically documented horse nomads with pre-European dog nomads. There is a need for alternative views, such as the cultural continuity hypothesis proposed in this work. There is also a need for a more systematized quantification and qualification of the total of archaeological evidence which would help to reduce subjective interpretive elements resulting from too great a reliance upon one or two facets of the evidence such as projectile points. A model of the kind of analysis advocated here is to be seen in the recent Sjovold river crossing site report (Dyck and Morlan 1995).

To varying degrees, all of the preceding criticisms can be levelled at archaeological interpretation in general and does nothing to negate in anyway the considerable amount of innovative research that has taken and is taking place on the Northern Plains. This research is progressively providing a fuller appreciation of past events and developments and, in particular, from Late Plains culture times up to the appearance of Europeans.

CHAPTER 27

LATE PLATEAU CULTURE

Précis:

The irregular topography of the Canadian Plateau of British Columbia and its altitudinal effect upon seasonal availability of plants and animals placed both constraints on, and provided opportunities for, hunters and gatherers. A plateau and mountain region south of 55° north latitude, the Canadian Plateau is situated between the Coast Mountains and the Rocky Mountains and north of the Canadian and American border (Holland 1964). Within its boundaries, the Fraser River and its tributaries represent the major drainage system followed by the Columbia River and then the Skeena River system on the northern boundary. A striking topographic feature is the Rocky Mountain Trench, which extends from the British Columbia border with Montana northwest to the Liard River in the Northwest Territories. The southerly 725 km of the Trench consists of a continuous valley, ranging from 3 to 16 km in width, within which the headwaters of the Columbia River system is situated only a short distance from the headwaters of the Fraser River. Both river systems eventually turn sharply to the southwest, with the Columbia River emptying into the Pacific Ocean between the states of Washington and Oregon while the Fraser River joins the Pacific Ocean at Vancouver. For the most part, the Canadian Plateau is covered by a cool, temperate Columbia-Montane Forest vegetation province characterized by spruce, aspen, lodgepole pine, cedar, hemlock, and Douglas fir. Precipitation ranges from 30 to 70 cm. with an annual snowfall between 75 to 500 cm. January and July mean temperatures range from -20 to -3 degrees C and 10 to 21 degrees C, respectively (McAndrews and Manville 1987). Anadromous fish, like salmon, who spawn and spend their juvenile stage in freshwater and most of their adult life in the sea, once ascended to the headwaters of the Columbia River in British Columbia as far as the Windermere and Columbia lakes, just 60 km west of the Alberta border. However, salmon were blocked by a falls from entering most of the Kootenay River system immediately west of Kootenay Lake. In this extreme southeastern portion of the Canadian Plateau bison were available and, while mule deer, white-tailed deer, caribou, wapiti, mountain goat, mountain sheep, black bear, and other game species were present their distributions and densities were locally quite variable (Banfield 1974).

Given the physiographic and ecological complexity and the range of opportunities and limitations for hunters and gatherers it is not surprising that cultural regionalism characterizes the area. This regionalism, however, is not sufficient to negate the application of a Late Plateau culture construct to the entire region, with the possible exception of the Kootenay area. Recognizing the environmentally diverse nature of the Canadian Plateau and its affect upon cultural regionalism has led to the opinion that "A mosaic of related variant cultures separated by mountain ranges or drainage divides maybe the only "typical" long-standing regional pattern" (Fladmark 1982: 125). Regions such as the Chilcotin, the Mid-Fraser, Thompson River, South Thompson River-Western Shuswap Lakes, Nicola, the Northern Okanagan, the Arrow Lakes (Ibid: 21) and, in particular, the Kootenay, do possess local cultural characteristics which reflect regional adaptations to local conditions. Despite the foregoing, the Canadian Plateau is regarded as sharing in a broadly similar cultural pattern. This pattern, locally referred to as the Plateau Pithouse tradition, is best known from the Middle Fraser-Thompson River region. The tradition has been divided into three cultural horizons that begin in Period III, span Period IV, and end with the historically documented Salishan-speaking people of Period V. A cultural horizon is considered to be "...essentially an integrative construct which recognizes a general level of inter-regional cultural similarity while at the same time acknowledging that certain regional differences exist" (Richards and Rousseau 1987: 41). The Kootenay area is excluded from the Plateau Pithouse tradition by Richards and Rousseau but this exclusion may be premature or, at the least, requires some qualification.

Late Plateau culture developed directly out of the preceding Middle Plateau culture. Once again, a possible exception to this generalization is the Kootenay region of southeastern British Columbia where limited detailed published evidence and lack of archaeological investigation of the two known pit house villages make it difficult to determine to what degree the region participated in Late Plateau culture, Late Plains culture, both cultures, or was distinct onto itself. On the basis of present evidence, it is believed that the region participated to a greater extent in Late Plateau culture than Late Plains culture to the east. Many of the ethnographically recorded Plains traits of the Upper Kootenay were likely recent introductions related to the use of the horse to seasonally exploit bison on the eastern slopes of the Rocky Mountains (Blake 1981). It is emphasized, however, that pit houses are a very rare phenomena in the region. With the exception of the Kootenay, there is agreement that the descendants of Late Plateau culture were the historic Salish-speaking bands of the Canadian Plateau. The Eyak-Athapaskan-speaking Chilcotin and Carrier to the north represent relatively recent immigrants into the territory south of 55° north latitude; the result of a major southward population movement that was probably related to the White River volcanic eruption and ash fall in the Yukon (Wright 1995: Black and White Plate IX, 145) which occurred around AD 500 (Moodie et al. 1990).

Late Plateau culture may be characterized as follows: a settlement pattern consisting of sedentary winter pit house villages in river valleys and short-term, warm weather camps that exploited a wide range of resources throughout most of the rest of the year; storage of winter food supplies in pits; the use of pit baking ovens; heavy use of heated stones for baking and boiling; a reliance upon salmon as a winter food but only as an integral element of a system where stored roots and berries and fresh and smoked deer meat were also of importance; a weakly developed bone technology; the dominance of chipped stone over ground stone implements; the presence of some zoomorphic carving; and evidence of increasing trade contacts with coastal people. The Kootenay region only partially fits this pattern and its affiliation with Late Plateau culture is currently based upon shared elements of technology.

Pit house dwellings, which first appeared in the Middle Plateau culture of Period III, were semi-subterranean structures, generally circular in outline with an inferred entrance via log ladder through the top of the conical or pyramidal roof. Depth of the house pit, interior features, and associated external features can be quite variable. Most pit house villages date to around 1,000 BC at the transition from Period III to Period IV. The increasing number and size of these villages is significant and may be attributed to an increase in sedentary life with its requirement of substantial amounts of stored winter foods such as dried salmon, smoked deer meat, dried roots, fungi, and berries. While it has been proposed that, between 4,000 BC and AD 1, stored foods supplemented big game hunting but that from AD 1 on the roles were reversed with hunting supplementing the stored fish and plant materials, it now appears that the important role of stored winter foods was well in place by Period IV and likely long before. In fact, the pit house villages may not be as much a result of increasing sophistication in food preservation methods as the coalescence of formerly dispersed winter populations. Reasons for winter population coalescence are more likely to be based upon the complex interplay of social, economic, and technological factors rather than any single factor like improvements in food storage.

The Plateau Pithouse tradition is characterized as a semi-sedentary settlement pattern involving winter pit house villages located in river valleys with a focus on salmon exploitation and winter food storage. Three sequential horizons make up this tradition and are as follows: Shuswap horizon from 2,500 to 500 BC; Plateau horizon from 500 BC to AD 800; and Kamloops horizon from AD 800 to European Contact (Richards and Rousseau 1987). Note that the foregoing calendrical age ranges are based upon a conversion of radiocarbon year ranges of 4,000 to 2,400 BP, 2,400 to 1,200 BP, and 1,200 to European contact, respectively, following Klien et al. (1982).

Technological trends during Period IV include the replacement of projectile point styles reminiscent of the McKean/Duncan/Hanna sequence of the Plains by a variety of corner-notched, basally notched, and stemmed forms. Despite earlier claims (Donahue 1975: 39), the bow and arrow weapon system does not appear in the Canadian Plateau until around the end of Period IV (Fladmark 1986:131; Richards and Rousseau 1987; Stryd 1973). Some regionalism is apparent with projectile point styles in the Okanagan and Arrow Lakes areas reflecting proximity to the Columbia Plateau. Though it has been suggested that both the Okanagan and Arrow Lakes regions participated in the cultural pattern of the Columbia Plateau (Turnbull 1977; Wilson 1980), there is now evidence to support their inclusion in the Plateau Pithouse tradition (Richards and Rousseau 1987). Cultural continuity within the tradition is apparent and even the criterion for the establishment of three sequential horizons is premised upon relatively limited settlement pattern and technological changes or has been related to environmental change. For example, climatic change has been used to account for the transition of the Shuswap horizon into the Plateau horizon (Richards and Rousseau 1987: 52) despite the rather minor nature of these changes. Increasing adaptive efficiency, associated with population growth and consolidation, is likely the single most important factor involved in change within Plateau culture.

By the beginning of Period IV or 1,000 BC "...the Plateau Pithouse tradition adaptive cultural pattern had been established throughout the Canadian Plateau" (Richards and Rousseau 1987: 23) as well as the Columbia Plateau (Ames and Marshall 1980: 35), although the process had begun in both regions prior to 2,000 BC. This settlement pattern phenomenon of winter villages situated in river valleys in both the Canadian and Columbia plateaus has been interpreted as a product of increasing sedentism, cultural complexity, and intensification of the importance of stored foods for winter consumption (Ames and Marshall 1980). The earliest year-round occupied pit house villages were located in strategic, resource-rich, centres. Population increase through time increasingly required more efficient specialized exploitation of certain resources (Lohse and Sammons-Lohse 1986). Some have argued that salmon fishing techniques and preservation methods were critical to the process while others have emphasized the importance of roots and other storable vegetable foods. There is some agreement, however, that populations increased during Period IV (Fladmark 1986). To what extent natural biological increase was responsible for this impression of population growth, as opposed to formerly more dispersed populations coalescing into the winter villages, is not possible to determine at this time.

Very little is known of Late Plateau culture cosmology. Flexed burials in the floors of pit houses have been reported. Fragments of human bone in hearths outside of dwellings suggest that cremation was also practised. In a cemetery near Kamloops, the partially cremated remains of four children were richly provided with ground nephrite adzes, antler digging stick handles, netsinkers, and dentalium marine shell beads (Smith 1900: 436). The majority of the carved and polished stone bowl seated human figures that occur on both the southern coast and the Canadian Plateau are estimated to date between 2,500 and 1,500 years ago. With few exceptions, these elaborate works of art have been discovered accidentally in locales generally removed from villages suggesting that they "...may have been used in secret rituals" (Fladmark 1986: 92). It has further been speculated that the bowl holding figures were used "...as ritual and divining vessels by shamans and ritualists" (Duff 1975: 52) and, thus, were "...associated with this veneration of life, and are in that sense sacred art" (Ibid: 52-53).

Little can be said concerning human biology due to both the scarcity of skeletal remains and published physical anthropological studies from the Canadian Plateau for Period IV. A burial from the Lillooet area involved a man who had survived several club blows to the side of the head and a stone projectile point wound in the lower arm (Stryd 1980), indicating the existence of conflict in the region as early as 500 BC. This individual was obviously cared for until his wounds healed.

Given mountain range impediments to ease of travel, as well as the location of the Canadian Plateau relative to the West Coast, the Plains, the Columbia Plateau, and the northern portion of the Cordilleran, relationships with neighbouring cultures appear to have been quite variable. While there was considerable contact between the people in the Mid-Fraser and Thompson River region with the coast, other areas of the Canadian Plateau exhibit relatively little evidence of significant coastal contact. Trade of steatite (soapstone), nephrite adzes, and basalt from the interior for dentalium beads and other marine shell objects from the coast, must only represent a limited reflection of a much broader trade in perishables such as dried salmon from the interior and eulachon fish oil from the coast. The best dried salmon came from the interior due to both excellent local wind drying conditions and the lower fat content of the salmon after they penetrated the interior from the coast (Romanoff 1985: 156). Dried salmon would eventually become the economic foundation of a coastal-interior trade network. Despite earlier suggestions to the contrary (Sanger 1967), there appears to have been significant contacts between the Canadian and Columbia plateaus. The sharing of a winter pit house village settlement pattern based upon stored foods, as well as certain projectile point styles, such as the corner-notched and basally-notched dart heads, indicate a relationship. The aforementioned projectile point styles are earlier in the Columbia Plateau and were probably derived from that area. Similarly, the earliest pit houses in the Upper Columbia

Plateau date to around 3,000 BC. (Lohse and Sammons-Lohse 1986) while the earliest appearance of these distinctive structures in the Canadian Plateau are dated approximately 1,000 years later suggesting probable south to north diffusion. Contacts with Late Plains culture are also apparent and particularly so in the earlier portion of Period IV. *Dentalium* and *Olivella* shell beads on contemporary Late Plains culture sites represent a further indication of trade between the two cultures. Northern contacts, such as trade in Mount Edziza obsidian from the headwaters of the Skeena River, appears to have been limited (Wright and Carlson 1987). Penetration of Eyak-Athapaskan speakers into former Late Plateau culture territories south of 55° north latitude did not occur until around the beginning of Period V (AD 500). The relationship of the Upper Kootenay region of southeastern British Columbia to Late Plateau culture or Late Plains culture cannot be properly assessed at this time. Pit house villages, although rare, have been recorded in the region (Borden 1956) but their time depth has not been determined. Southeastern British Columbia chert and argillite, however, is common on some Alberta Foothills sites (e.g. Driver: 1993: Figures 4 & 5).

Late Plateau societies consisted of a number of individual families grouped into local bands with the kinship network being extended through inter-band marriages. It is probable, as has been documented by European observers, that a number of bands coalesced temporarily into a common winter village. It has been proposed that ranked societies developed at this time, as suggested by the variable sizes of individual pit houses in winter villages and other lines of evidence (Hayden et al. 1985). On the other hand, the contents of the houses, large and small, generally provide little convincing evidence of a biased distribution of luxury goods in favour of the larger dwellings despite claims to the contrary (Hayden and Spafford 1993). The larger pit houses of Period III and Period IV in the Mid-Fraser and Thompson River area, however, do suggest a more complex socioeconomic pattern (Pokotylo and Froese 1983: 152). There is evidence of distinct corporate groups occupying specific dwellings on a continuous basis for as long as 1,000 years. These different corporate groups within the same community exploited different regions for mineral resources indicating ownership of designated resource areas by specific family groupings in the society (Hayden et al. 1996). Resource ownership, however, is not necessarily indicative of ranked societies and could be simply an expression of the traditional rights of individual corporate groups and families making up the society. Also, the large pit houses could have been the dwellings of local chiefs or the different band chiefs in multi-band winter villages that attracted larger numbers of residential followers. Large dwellings would have been required to accommodate winter ceremonies such as have been historically documented among the Lillooet. Dwelling size differences among other corporate groups like the Iroquois, for example, were not indicative of ranking within the society per se, nor was the fact that certain clan lineages and segments could exert control over specific resource areas. It has been speculated that historically recorded social systems, such as hereditary chiefs, private ownership of resources, and controlled trade, can be extended back 2,000 years ago in the Lillooet area (Hayden and Ryder 1991: 54) but only the second speculation has been demonstrated by archaeological evidence. There is a need to determine why some of the large pit house villages appear to have been occupied for only a short period, such as the Kamloops Reserve site (Wilson 1972), while others were occupied continuously for more than 1,000 years, such as the Keatly Creek site (Hayden and Spafford 1993), or why the portion of the former site, that survived the bulldozers, was characterized by uniform sized pit houses associated with small pits that appear to have been sweat lodges or other special purpose features and, in these respects, differed significantly from the Keatly Creek site settlement pattern. There is also the problem of how these larger pit houses were roofed. The post mould pattern (e.g. Hayden and Spafford 1993: Figure 10) provide few clues and thus it is possible that such dwellings were not roofed in the ethnographically recorded fashion of domed structures with an entrance via log ladder through the peak of the roof.

A limitation in the evidence relating to Late Plateau culture as a whole has been the heavy reliance upon pit house village excavations, with their generally mixed cultural deposits, to reconstruct the culture history. Some excavations, however, have revealed single occupation houses and even villages (Wilson 1972) and, as a result, a reliable culture history appears to have been realized despite problems of component mixture due to house re-use and the multiple occupation of village site locales. There is likely to be some degree of under representation of the older segments of winter villages in river valleys due to erosion (Richards and Rousseau 1987: 54). It has only been recently that focus has been directed away from the winter villages to small veneer, warm weather campsites exploiting a range of resources such as roots and berries (Pokotylo 1981). A major limitation has been site destruction due to land development, particularly the creation of hydro-electric reservoirs that have flooded entire river valleys. Looting is a serious problem in certain areas like Kamloops. A less obvious problem is to be found in the publication of the archaeological record and its availability. In the most recent synthesis of Canadian Plateau archaeology (Richards and Rousseau 1987) 37% of the 214 references represent unpublished manuscripts, theses, and papers presented at meetings.

Cultural origins and descendants:

Late Plateau culture developed in place out of Period III Middle Plateau culture just as the latter is believed to have evolved out of the Period II Early Plateau culture. This suggested cultural continuity is most controversial during the earlier time periods

(Wright 1995: 138-139, 335-339) but there is agreement regarding the continuity of Late Plateau culture throughout Period IV and up to the time of European contact. In fact, the 4,000 to 5,000 years of cultural continuity in the Lillooet region, attributed to speakers of the interior Salish language, has perhaps encouraged too much faith being placed on extrapolations from 19th and early 20th century European documentation to the archaeological record (Hayden and Spafford 1993: 108). Relative to the passage of time and the repetitive use of the winter pit house villages, it has been observed that "...the continued re-use of site areas by various phases of prehistoric inhabitants of the Plateau - speaks loudly for some degree of continuity in settlement and subsistence patterns, regardless of habitation style or culture 'types' " (Magne 1985a: 84).

Pertinent to conflicting early migration scenarios regarding the ancestors of Late Plateau culture, such as whether people moved from the coast to the interior or came from the southern and/or northern Cordillera, is the fact that five major language families occur along the coast while in the interior one of the aforementioned families (Salish) shares the Canadian Plateau with Kootenay. Even here there is a possibility that the Kootenay language has a 'distant genetic' relationship to Salish (Campbell and Methun 1979: 37-38). The Eyak-Athapaskan language is regarded as a late, post AD 500 intrusion into the Canadian Plateau. Coastal Salish, that dominated the straits of Georgia and Juan du Fuca and coastal regions further to the south as well as the lower Fraser River, is contiguous with interior Salish but is composed of more dialect areas than interior Salish (Kinkade et al. 1987) raising the possibility that, at some time in the distant past, there was a spread of the Salish language to the interior from the coast. Speculations based upon current language family distributions, however, are rife with problems and do not by themselves constitute proof relating to early population migrations. It is apparent that strong cultural continuities in the Canadian Plateau existed from at least 2,000 BC to European contact when the carriers of the culture can be identified with the Salish-speaking peoples of the interior. Prior to 2,000 BC there are technological continuities which suggest a lengthy in place development that was modified by cultural diffusion rather than population intrusions.

Consideration of the Eyak-Athapascan-speaking Carrier and Chilcotin will be addressed in Volume III as their penetration into former Late Plateau culture territory between approximately 54° to 52° 30' north latitude was a post AD 500 event. As observed regarding the Carrier at the time of European contact in comparison to the Late Plateau culture from the Natalkuz Lake site in the northern Canadian Plateau "...it is difficult to envisage the earlier as ancestral to the later culture of this area" (Borden 1952: 37). Thus during Period IV Late Plateau culture history appears to pertain only to interior Salish speakers and Kootenay speakers both of whom may be. in terms of language, distantly related. The proposal that the replacement of Salish-speakers by

Athapascan-speakers in the northern portion of the Canadian Plateau took place at a sufficiently slow pace to permit the acculturation of the latter to Late Plateau culture and thus make the event archaeologically invisible (Donahue 1975: 55) is rejected on the grounds of a significant discontinuity in the archaeological record of the area.

Pertinent radiocarbon dates from the Canadian Plateau are available from the Arrow Lakes area, the north Okanagan Valley, the Nicola Valley, the West Shuswap Lake/Lillooet/Lochnore region, Taseko Lake, the Chilcotin region, and the Blackwater River/Southern Nechako plateau. Dates span the entire Period IV. Details on dated sites, material dated, radiocarbon age BP (Before Present), and other information can be found mainly in Richards and Rousseau (1987) with additional information in Donahue (1975), Magne (1985), and Stryd (1980).

Technology:

The simplest way to provide an impression of nature of the Late Plateau culture tool kit is to compare the assemblages from several sites whose dates span most of Period IV. All three of the sites in Table 18 are located on the Fraser River drainage and were selected because of their sample sizes, limited time depth and consequentially reduced component mixture, and completeness of the original artifact descriptions. It was necessary, for comparative purposes, to modify the original descriptive artifact categories but errors resulting from this modification should be minor. With reference to the Van Male and Kamloops Reserve sites (Wilson 1980: Table 11), non-formed bifaces equals flake knives, non-formed unifaces (retouched) equal flake scrapers, and miscellaneous and some other minor categories, such as macroblades, have been excluded. From the Lochnore Creek site house pit some minor items such as drills, cobble spalls, chopper tools, hammerstones, red ochre, and a few other categories have been excluded as they either were not quantified or could not be related to a specific archaeological context in the original report (Sanger 1970). The Van Male site is a single component village site, dated to 1,000 BC, with materials coming from three pit houses and two small exterior excavations (Wilson 1980). The Lochnore Creek materials came from the lowest occupation floor (Zone 1) of a multi-component pit house dating to around 600 BC (Sanger 1970). The Kamloops Reserve site apparently possessed limited time depth and materials were recovered from three pit houses, a sweat lodge, and some exterior excavations (Wilson 1980). The site has been radiocarbon dated to AD 1. The Lochnore Creek site is located on the Fraser River and the two other sites are on the South Thompson River, a major tributary of the Fraser River.

Category	Van Male		Lochnore Creek		Kamloops Reserve	
	f	%	f	%	f	%
Projectile points	18	9.1	49	6.4	25	3.7
Biface knives	24	12.1	145	18.9	75	11.0
Flake knives	66	33.2	141	18.4	199	29.1
Flake scrapers	83	41.7	270	35.2	354	51.8
End scrapers	-	-	40	5.2	8	1.2
Side scrapers	-	-	6	0.8	1	0.2
Microblades	-	-	48	6.3	3	0.4
Gravers	1	0.5	6	0.8	6	0.9
Abraders	1	0.5	-	-	1	0.2
Hammerstones	2	1.1	?	?	1	0.2
Drills	-	-	?	?	5	0.7
Nephrite adzes	-	-	9	1.2	-	-
Uniface knives	-	-	5	0.7	-	-
Spall tool	-	-	?	?	1	0.2
Shaft smoother	-	-	-	-	1	0.2
Bone points	3	1.5	11	1.4	2	0.3
Antler wedges	1	0.5	1	0.1	1	0.2
Bone awls	-	-	18	2.4	-	-
Bone beads	-	-	5	0.7	-	-
Beaver incisor knives	-	-	4	0.5	-	-
Drilled canine	-	-	1	0.1	-	-
Bone creaser	-	-	1	0.1	-	-
Bone whistle	-	-	1	0.1	-	-
Dentalium beads	-	-	2	0.3	-	-
Olivella beads	-	-	2	0.3	-	-
Shell pendant	-	-	1	0.1	-	-
Native copper beads	-		2	0.3	-	-
Total	**199**	**100.2**	**768**	**100.3**	**683**	**100.3**

TABLE 18: FREQUENCIES OF ARTIFACT CATEGORIES IN THE TOOL KITS OF THREE LATE PLATEAU CULTURE SITES IN THE MIDDLE FRASER AND SOUTH THOMPSON RIVERS REGION

Allowing for regional and temporal differences, as well as possible minor errors in translating different classification schemes into a common system for comparative purposes, it is apparent that the three Late Plateau culture sites, collectively spanning 1,000 years, have much in common in terms of their tool kits. Simple flake scrapers, consisting of flakes with one or more unifacially retouched edges, and flake knives, consisting of flakes with one or more edges bifacially retouched, constituted from 81 to 54% of the total assemblages with the lower frequency occurring at the Lochnore Creek site. Flake scrapers, utilized flakes, and presumably flake knives, represented between 50 and 75% of the total tool assemblages from other sites in the Lillooet region (Stryd 1972: 35). The high frequencies of flake scrapers and flake knives is regarded here as a diagnostic feature of Late Plateau culture technology, at least in the Mid-Fraser and South Thompson region. No significant tool category frequency changes through time are apparent on Table 18. The erratic occurrence of microblades is noteworthy but it is cautioned that the identification of microblades at the Kamloops Reserve site has been brought into question with the suggestion that they actually represent bifacial trimming flakes (Rousseau and Richards 1985). Microblade presence or absence at the sites highlight the limited utility of microblades to reconstruct culture history in the Canadian Plateau. At all three sites the fashioning of tools by stone grinding represented a minor trait. The bone tool industry is also impoverished but this appears to be typical of Late Plateau culture (Stryd 1972). A problem with the above site samples, of course, is just how much component mixture is involved as a result of combining samples from a number of excavation units and features at the South Thompson River sites and from a reoccupied pit house at the Lochnore Creek site. Table 19 attempts to address this problem by comparing two apparently single component pit houses from the Kamloops Reserve site (Wilson 1980).

Category	House pit 10		House pit 19	
	f	%	f	%
Projectile points	8	7.6	9	6.6
Biface knives	23	21.7	27	19.9
Flake knives	64	60.4	88	64.7
Scrapers	2	1.9	6	4.4
Drills	1	1.0	1	0.7
Gravers	4	3.8	1	0.7
Microblades	3	2.8	-	-
Spall tool	-	-	1	0.7
Abrader	1	1.0	-	-
Shaft smoother	-	-	1	0.7
Hammerstone	-	-	1	0.7
Antler wedge	-	-	1	0.7
Totals	**106**	**100.2**	**136**	**99.8**

TABLE 19: TOOL CATEGORY FREQUENCIES FROM TWO SINGLE COMPONENT PIT HOUSES AT THE KAMLOOPS RESERVE SITE House 19 dates to AD 1 and house 10 is not dated. Information was obtained from Wilson 1980, Table 3 with the following modifications: likely the most abundant tool category was non-formed unifaces (flake scrapers), 198 and 184 specimens, respectively, but could not be included in the Table as retouched and utilized specimens were lumped together in the original report; some minor categories such as formed unifaces and miscellaneous chipped stone and antler were excluded.

Correspondences in the tool kits from the two pit houses are striking and suggest a very similar pattern of tool use, replacement, and discard and/or loss within the houses. Given the similar frequencies of the lumped flake scrapers and utilized flake categories from the two houses it is unlikely that the necessary exclusion of this tool category from Table 19 has seriously affected the comparison of the assemblages. The foregoing tool kits, of course, only pertain to winter pit houses in this particular region of the Canadian Plateau.

Late Plateau culture projectile point styles begin with the McKean/Duncan/Hanna-like point sequence characteristic of the Plains and the preceding Middle Plateau culture. A range of contracting and straight stemmed points, as well as bipointed and lanceolate forms, are also present. Around 500 BC, corner and basally notched and barbed points become popular and maintain a dominant position until the end of Period IV. While "It is clear from the presence of approximately contemporaneous, similar to identical projectile point styles on the Canadian and Columbia Plateaus, Northwest Coast, Rocky Mountain Trench, and Northern Plains, that projectile point types cannot be equated with 'cultures'..." (Richards and Rousseau 1987: 7) a rigorous application of form and metrical attribute analysis to many of these 'similar to identical' point forms would likely reveal significant regional and temporal differences.

Spearthrower weights of galena, a lead sulphide with exceptional mass, and soapstone are rare. Their scarcity mirrors that of spearthrower weights on the Plains and in the lower Great Lakes region suggesting that the primary function of such objects across the country was more symbolic than pragmatic in a mechanical functional sense. It has been suggested that the bow and arrow weapon system was not introduced into the Canadian Plateau until around AD 500 (Fladmark 1986: 131; A. Stryd in Wilmeth 1978a: 64) when it was most likely obtained from Late Plains culture to the east. There is also the possibility that the weapon system was derived from the Columbia Plateau where its introduction falls somewhere between the 1,400 BC level V of the Lovelock Cave site (darts only) and the AD 300 level II of the same site (arrows only) (Cressman 1977: 106-107). Opinion varies, however, and it has even been proposed that the bow and arrow replaced the spearthrower as early as 1,500 BC (Kirk and Daugherty 1978: 53). Others regard the bow and arrow as being present in the Canadian Plateau as early as AD 200 where it coexisted for a time with the spearthrower (Richards and Rousseau 1987). This latter view is most likely correct. Anywhere the bow and arrow was introduced it coexisted with the earlier spearthrower for a considerable period of time. Such a pattern is to be expected as people are not likely to discard a tried and tested weapon system for a new one until they had fully familiarized themselves with the latter; particularly as the bow and arrow system requires quite different operational and manufacturing skills as well as some changes in hunting tactics and, perhaps most importantly, the tactics of warfare.

A distinctive tool found in Late Plateau culture is an asymmetrical, 'key-shaped', unifacially or bifacially flaked implement with a piercing tip. Never common, these presumed cutting and scraping implements appear around 1,500 BC and persist to the end of Period IV. Other carefully formed tools, whether they be chipped scrapers, ground celts, or microblades, tend to be rare although there is some increase in end scraper frequencies. The erratic occurrence of microblades can be seen at the stratified Nesikep Creek site (Sanger 1964) where they are found in the Early Plateau culture stratum, are absent from the beginning of Late Plateau culture but reappear in force later in Period IV and then diminish rapidly after AD 500. Throughout the span of Late Plateau culture the simple flake knife and flake scraper dominate the tool kit (Richards and Rousseau 1987). These simple but efficient tools are likely the end product of initial use of the naturally sharp edges of freshly struck flakes for cutting and other purposes with subsequent resharpening by either bifacial or unifacial retouch. Around 500 BC there is a change in emphasis from the use of mainly local stone varieties for tool manufacture to high quality materials such as vitreous basalt and chert.

Where good bone preservation conditions exist bone tools are present but rarely numerous. Items such as disc and tubular beads, bracelets, bilaterally and unilaterally barbed and toggling harpoons, awls, tooth pendants, incisor knives and antler digging stick handles have been recorded. The toggling harpoon, a coastal innovation, is represented by harpoon valves that were a component of this composite tool.

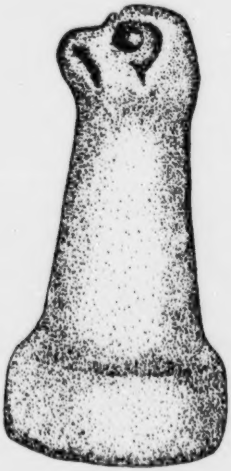


FIGURE 88: LATE PLATEAU CULTURE ZOOMORPHIC MAUL OR PESTLE This polished stone implement from the Lehman site south of Lillooet could have been used as a hammer in wood working with a stone adze or wooden wedge and/or possibly for the grinding of dried plants and meats. The animal portrayed is probably a stylistic frog or toad, an animal that appears to have had special symbolic significance along with the rattlesnake in Late Plateau culture three dimensional art. (Reproduced, with permission, from Dr. David Sanger, Department of Anthropology, University of Maine at Orono, 1970: Figure 32h. Drawn by Mr. David W. Laverie. Scale: 24 cm in height)

By 500 BC there is an increase in the trade of marine shell beads. There is also some evidence that by AD 1 stone sculpture, ground nephrite adzes, hand mauls, and steatite and slate objects increase in frequency. As the major geological sources of nephrite and steatite occur between Lillooet and Yale on the Fraser River (Fladmark 1986) it is not surprising that artifacts made of these materials are most common in the Mid-Fraser region. Nephrite is a form of jade (amphibole) that was used in the manufacture of celts and ornaments while steatite or soapstone is a very soft talc mineral used for carving three dimensional effigy bowls and other objects. Native copper items, such as beads, are very rare and appear to be late in Period IV. In cases of exceptional preservation birch bark containers have been recovered. At the Fountain site near Lillooet decorated birch bark fragments and a birchbark 'dip-net ring' were found (Stryd 1972). Evidence of soapstone tubular smoking pipes appears to be absent during Period IV, which is surprising given their stated presence in the Okanagan region of Washington State as early as 4,000 BC (Kirk and Daugherty 1978: 69).

To the south of the Mid-Fraser/Thompson River in the Arrow Lakes and Okanagan regions assemblages have often been attributed to the Columbia Plateau (Grabert 1971; Turnbull 1971: 47). The abundance of flake knives, flake scrapers, the occurrence of nephrite adzes and other traits, however, suggest a relationship with Late Plateau culture. In the Kootenay area of southeastern portion of British Columbia, the high frequency of flake scrapers, the presence of pestles and certain other traits, such as projectile point styles and drills (Blake 1981; Borden 1956), suggest a relationship with Late Plateau culture although flake knives are apparently rare. Pit house villages are rare in this region and the time depth of the few known sites has not been determined (Borden 1956). In the Inissimi complex of Period IV in the Kootenay region, the most common projectile point form is a distinctive expanding stemmed point with a convex base and acute to right angle shoulders. Similar points with concave bases are also present as are parallel stemmed and lanceolate forms (Choquette 1987: 99). Perhaps the most distinctive characteristic of the Inissimi complex stone tool technology was the use of cobbles to produce bifacial cores from which large flakes were struck to be used as expedient tools. Associated with the aforementioned complex are notched stone net sinkers and abundant flake tools.

Further north at the Tezli site (Donahue 1975), the tools recovered from house pit D (AD 100) and pit house B (AD 500) clearly relate to Late Plateau culture. Similarly, pit houses in the Anahim Lake area (Wilmeth 1978a), with their microblades, flake scrapers, flake knives, biface knives, and projectile point styles, as well as the contents of a unique 2,500 year old house at the Natalkuz Lake site (Borden 1952) are all attributable to Late Plateau culture.

A number of stone quarry sites have been recorded in the Canadian Plateau. The Top of the World chert quarries in southeastern British Columbia (Choquette 1981; 1987: Fig.3-1, 79) appear to have been under Late Plateau culture control rather than Late Plains culture to judge from the mainly westerly and southerly distribution of this distinctive material. Top of the World quarries, first exploited in Palaeo-Indian times, are situated 2,150 m above sea level and cover an area 20 km in diameter. Exotic lithics found at the aforementioned quarry site consisted of Montana cherts, Kootenay argillite, and Purcell siliceous siltstone, again suggesting western and southern relationships. Basalt, quartzite, and other siliceous cobbles are a common occurrence throughout much of the Canadian Plateau as well as a bipolar method of reducing cobbles into flakes for expedient tools and eventual artifact production (Fladmark 1986; Pokoytylo 1981; Wilmeth 1978a).

It has been recognized that stone tool manufacture is not only dependant upon the availability of suitable stone for chipping but also upon specific tool requirements and how these requirements relate to the seasonal settlement patterns and subsistence rounds (Pokotylo 1981). In the Hat Creek Valley, where there is abundant local stone suitable for tool manufacture, the subsistence focus was the major factor influencing the lithic assemblage variability at sites. These root processing camps in the uplands acted as base camps where many other activities took place and as a result they are characterized by considerable diversity in the chipping detritus resulting from the manufacture of a wide variety of tools (Ibid: 387). Detailed analysis of the debitage produced by tool manufacture from such upland sites has permitted inferences concerning the finished chipped stone tools even when they have not been actually recovered from the same site as the debitage (Magne 1985: 260).

Subsistence:

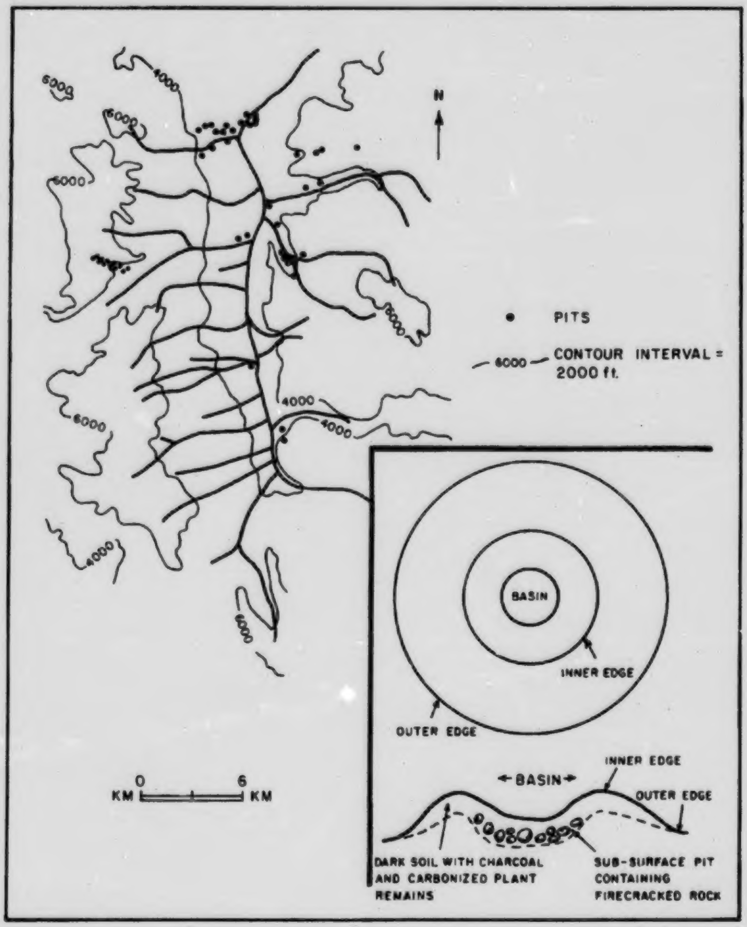
A distinctive feature of subsistence in the Canadian Plateau was the altitudinal effect on biotic zones which permitted not only the exploitation of a wide range of altitudinal influenced habitats, but also an extended season for certain foodstuffs, such as roots and berries, that ripened at different times during the summer in progressively higher areas. Despite the usual archaeological emphasis upon the roles of fishing and hunting, in Canadian Plateau subsistence it is possible that the limited archaeological evidence of edible tubers, berries, cambium bark, and fungi were as important in both caloric and nutritional terms as fish and game in the winter diet. There has been some debate regarding the relative roles of dried salmon storage versus root and berry storage in the evolution of winter pit house villages. Rather than being an either/or situation, it is virtually certain that subsistence rounds were finely tuned to take advantage of all the resources of the Canadian Plateau. Thus an adaptation in a region lacking anadromous salmon streams but rich in elk, other big game, and plant foods, would be significantly different from what one could expect along a major salmon river.

The following historically documented monthly subsistence rounds of the Thompson Indians (Teit 1900) provides an indication of both the variety and the major resources exploited in that particular region: November - hunting of deer during their rut by ambush/snare/communal drives; December - consumption of stored plant and animal foods in the pit houses; January - consumption of stored foods supplemented with hunting; February - consumption of stored foods; March - the pit houses are abandoned; April - trout captured by trapping, spearing and netting; May - camas root (*Quamasia quamash*) dug; June - service berries (*Amelanchier alnifolia*) preserved by drying and baking; July - various berries harvested and processed; August - the major runs of the sockeye salmon (*Oncorhynchus nerka*) exploited and dried for winter use; September - coho salmon (*Oncorhynchus kisutch*) run harvested; and October - deer hunted and trapped. Of particular interest in the foregoing subsistence round is the importance of stored food for winter survival and the obviously critical role of plant foods as a storage food. When considering subsistence practices archaeologists naturally emphasize animal foods as bone fragments tend to survive in the archaeological record. In this Chapter the whims of preservation will be ignored and plant foods will be given prior consideration.

There are two reasons why the importance of vegetable foods is underrated by archaeologists. First, as a rule plant preservation in archaeological deposits is the result of accidental charring and the recovery of the minute charred fragments requires sophisticated field recovery methods, such as flotation, followed by painstaking and expensive analysis. Earlier excavation methods and goals did not consider the significance of the microscopic evidence being discarded in the 'back dirt'. Even today, the cost of flotation of archaeological sediments in the field and subsequent analysis by specialists trained in the field of ethno- or archaeo-botany often means these field and laboratory methods are not used. Many plant materials, such as edible roots, simply do not survive well in the archaeological deposits as identifiable objects. A second reason plants are under emphasized is that early observers of native peoples were men and they asked questions of men rather than women and, therefore, recorded a male-oriented bias towards hunting and, in the case of the Canadian Plateau, fishing. The gathering of plants has generally been the responsibility of women among temperate zone hunting and gathering peoples, as has the responsibility for processing both plant and animal foods for the winter larder. Fortunately, James A. Teit, a turn of the century ethnologist who worked in the Canadian Plateau and had an interest in botany, recorded the importance of plants to native subsistence. He noted that "Root gathering started in early spring at lower elevations and increased in intensity as groups moved to the uplands, following the root fields as they matured" (Teit 1900: 230). The importance of plants as a winter food is evident in the following: "An interior Salish family's winter store might include 90 kilograms (200 pounds) of yellow avalanche corms or dried bitter-roots, 45 kilograms (100 pounds) of dried Saskatoons, as well as dried cakes of soapberries, blueberries, raspberries, 'red willow' berries, black hawthorn berries and others, a large supply of black tree lichen loaves, and many strings of dried mushrooms, not to mention several sacks of balsam-root seeds and white-bark pine nuts. These consumed with the winter supply of dried salmon, deer meat, and other animal foods, permitted a comfortable existence during the cold season, where their absence made survival a near impossibility" (Turner 1978: 33). Edible root species in the southern Canadian Plateau with early spring to fall harvesting seasons are as follows: sweet cicely (*Osmorhiza chilensis*); balsamroot (*Balsamorliza saqittata*); waterleaf (*Hydrophyllum capitatum*); yellowbell (*Fritillaria pudica*); water parsnip (*Sium suave*); mariposa lily (*Calochortus macrocarpus*); yellow avalanche lily (*Erythronium graniflorum*); chocolate lily (*Fritillaria lanceolata*); wild onion (*Allium* sp.); chocolate tips (*Lomatium dissectum*); wild carrot (*Lomatium macrocarpum*); spring beauty (*Claytonia lanceolata*); bitter-root (*Lewisia rediviva*); tigerlily (*Lilium columianum*); cinquefoil (*Potentilla anserina*); and wild thistle (*Cirsium edule*) (Pokotylo and Froese 1983: Table 1). Also historically documented as being important among the Lillooet Indians were the spring stalks of Indian rubarb (*Heracleum lanatum*), stinging nettle (*Urtica droica*), and fireweed (*Epilobium angustifolium*) (Kennedy and Bouchard 1978; 1978: 41-42).

In the Thompson River drainage root processing in large roasting pits appears to have been most intensively carried out between 300 BC and AD 800. This time span corresponds with the appearance of large pit house villages on the Fraser River and its tributaries near Lillooet (Hayden and Spafford 1993: Figure 2). It has been speculated that such villages were supported by an intensification of root resource exploitation rather than an intensification of the salmon fishery (Pokotylo and Froese 1983: Table 3; Rousseau 1989: 152-153). Early 20th century observers have recorded that eighteen varieties of roots, eighteen varieties of berries, mosses, lichens, cacti, nuts, and the cambium of eight species of trees were used as food (Teit 1909; Turner 1978). Any debate regarding the dominance of vegetable foods or animal foods as the economic base of the winter villages is a non sequitur as both would have been required for a balanced diet. Vitamins from the plant foods, particularly Vitamin C, would have been of critical importance to avoid vitamin deficiency diseases like scurvy.

Most plant materials are found on mountain slopes and valleys where seasonal base camps would be established adjacent to water and the plant concentrations. Many of the large roasting pits or, more accurately, roasting/processing pits since both functions were likely involved, exhibit evidence of considerable reuse. Such continuous use of specific plant rich areas also suggests the practice of plant husbandry where harvests of plants were managed in order to avoid seriously impacting upon the ability of various plant species to recover and produce a new crop.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DARK SOIL WITH CHARCOAL AND CARBONIZED PLANT REMAINS
SUB-SURFACE PIT CONTAINING FIRECRACKED ROCK

FIGURE 89: ROOT PROCESSING PIT SITE DISTRIBUTION AND PIT FEATURES
The map of the Upper Hat Creek Valley, to the north of the juncture of the Fraser and Thompson rivers, shows the distribution of root processing pit sites relative to elevation along Hat Creek and its tributaries. The insert is a schematic plan and cross-section view of a root processing pit. (Adapted from Pokotylo and Froese 1983: Figures 3 and 4. Drawn by Mr. David W. Laverie)

Calibrated radiocarbon calendrical dates from plant processing pits that pertain to Period IV range from 300 BC to AD 500 (Pokotylo and Froes 1983: Table 3). Dimensions of the single rock lined basin variety of roasting/processing pits range from 3.6 to 5.2 m in diameter for the rim crest and between 6.5 and 7.5 m in diameter for the outer edge while the equivalent measurements for the multiple rock lined pits are 5.4 to 5.6 m and 12.4 and 12.9 m, respectively. In addition to the masses of fire cracked rock in these features, charcoal, some charred remains of deer, elk, grouse, fish, *Allium* sp., *Compositae*, and *Liliaceae*, as well as matting materials, such as coniferous needles and branches, and kinnikinnick (*Arctostaphylos uvaursi*) were recovered.

Artifacts that can be associated with plant gathering and processing are rare for, as the written records indicate, most such tools were either perishable or multi-functional in nature. Stone pounders from the Kootenay Lakes region, however, are inferred to have been used in the production of moss bread made from a tree lichen (*Bryoria fremontii*) (Keddie 1988). Such tools could also have been used for mashing berries, seeds, and dried meat. Stone mauls or pestles, which would have served a range of hammering and grinding functions, appear in the Mid-Fraser and the Thompson River possibly as early as 1,000 BC. The oldest date for an antler digging stick handle is 500 BC (Fladmark 1986: 130).

As elsewhere in Canada, in assessing subsistence practices on the Canadian Plateau the focus has been more directed to the animal component rather than plant foods given the preservation of the former as bone and shell fragments. Assumptions regarding subsistence and diet based solely upon such faunal remains, however, are fertile grounds for misinterpretations. Historically documented native methods of butchering and processing salmon, for example, leave only limited direct evidence. A number of other factors, involving such matters as food capturing and processing methods and cultural taboos relating to the treatment and disposal of animal remains, can determine what animal remains do or do not appear on a site and in what quantities. The problem is further compounded by variable bone preservation due to soil conditions and the passage of time. There have been attempts to attribute cultural phenomenon, such as a changing emphasis on salmon fishing and away from hunting, to climatic change even though the changes were slight and the evidence equivocal (Richards and Rousseau 1987; Wilson 1980: 81). From this perspective, the trend away from small dispersed groups of highly mobile people to increasingly concentrated sedentary populations in the river valley pit house villages, beginning in Period III, has been attributed to climatically induced lower temperatures which led to an expansion of the coniferous forests that, in turn, reduced the number of big game animals and thus forced a greater reliance upon salmon around 2,000 BC (Kuijt 1989). Other explanations for the move to concentrated winter settlements in the river valleys have been attributed to technological advancements

(Hayden et al. 1985), including the acquisition of improved salmon capture and/or storage techniques (Nelson 1973), migrations of people (Stryd 1971), or advances in root processing methods (Ames and Marshall 1980). Rather than there being an either-or explanation for the large winter settlements in the river valleys of both the Canadian and the Columbia plateaus it was more likely a product of population coalescence and cultural elaboration determined by a number of interrelated factors whose effects intensified through time. Given the nature of the archaeological evidence, it is unlikely that a single system, such as subsistence, will ever be able to convincingly demonstrate that it was the central causal factor underlying the shift to winter villages. With the preceding cautions in mind the following will consider the evidence for the use of animal foods by Late Plateau culture peoples.

The suggestion that salmon fishing on the interior Fraser River had reached historically documented levels of importance by 500 BC (Fladmark 1986: 127) is based mainly upon settlement pattern evidence rather than direct evidence, such as increasing numbers of salmon bones in the garbage. European observers documented that weirs, dip nets, traps, spears and bows, and stream poisoning, were all used to capture fish, including anadromous species such as salmon and steelheads. Steelheads are rainbow trout (*Salmo gairdneri*) who breed in freshwater but live most of their adult lives at sea. Fish were usually processed for winter storage at the capture site, generally a narrow gorge in the river where migrating fish were forced to concentrate in fast water. Filleting and drying methods frequently removed the spinal column and the heads. These along with the entrails and other scrap parts were mashed and boiled and the resulting fish oil collected and stored for later use. Such specialized fishing locations and processing methods would leave little or no direct evidence at winter habitation sites where the fish were actually consumed. Direct evidence from such sites could seriously underestimate the relative importance of salmon in the winter diet. Contrary to the foregoing is the conclusion that the recovery of the bones of different salmon species from house pits of different dimensions at the Keatley Creek site represented evidence of "...differential access to salmon procurement locations where different species of salmon could be obtained" (Hayden et al. 1996: 335). Certain salmon species, such as pink salmon (*Oncorhynchus gorbuscha*), were less desirable than other species. This and other evidence of differences in the contents of small, medium, and large pit houses was then used to suggest that some degree of social differentiation existed in the society with the social elite corporate groups occupying the larger dwellings and having exclusive rights to the best fishing locales and most desirable salmon species.

Allowing for possible exceptions, such as noted at the Keatley Creek site, it is not surprising that archaeologists have relied more upon site locations near fishing pools and rapids to infer the importance of fishing than actual direct bony evidence. Fortunately,

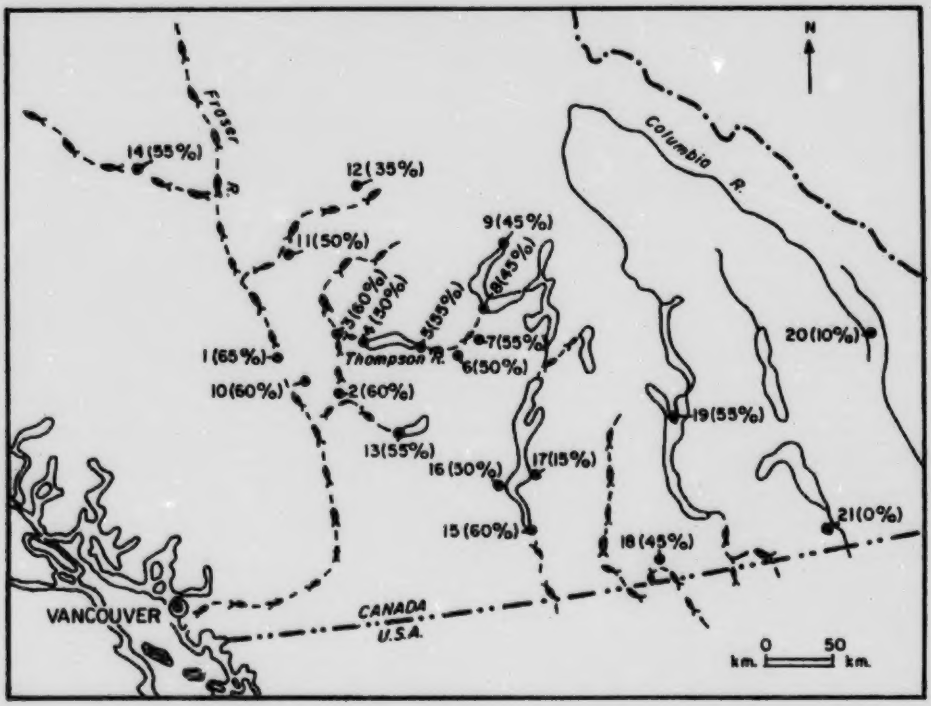


FIGURE 90: MARINE PROTEIN CONSUMPTION IN THE CANADIAN PLATEAU
Human bone samples tested are given as a number immediately followed in brackets by the calculated average of marine protein ingested by the individuals tested thus providing a relative indication of the amount of anadromous fish consumed. (Adapted from Lovell et al. 1986: Figure 1. Drawn by Mr. David W. Laverie)

a recent method of analysis has permitted hitherto impossible inferences concerning the importance of anadromous fish in the diet of interior peoples. The analytical method in question is based upon a number of interrelated factors. All plants use one of three possible photosynthetic pathways called C3, C4 and CAM. Only the first two need concern us here. These different pathways concentrate the heavy carbon isotopes C12 and C13 in different ratios in C3 and C4 plants and the differing ratios are then transmitted to herbivores eating the plants and then to carnivores who consume the herbivores. There are also differences in carbon isotope ratios of organisms from the atmospheric versus the marine carbon-dioxide reservoirs as determined by terrestrial C3 plants in temperate latitudes and by dissolved carbonates in salt water (see Chisholm et al. 1983; Katzenberg 1992). Thus, interior people who eat anadromous fish have a permanent record of the fact incorporated in their bones which can then be measured to determine the percentage of marine food (e.g. salmon) relative to nonmarine food consumed. Obviously there is more to the old adage that 'We are what we eat' than would first meet the eye. Measurement of the stable carbon isotope C13 in the bone collagen of 44 individuals from 21 locations over the last 2,000 years (Figure 90) indicates significant consumption of marine food (salmon and steelhead) in the Canadian Plateau (Lovell et al. 1986). Calculations of average ingestion of marine protein range from 0 to 10% in southeastern British Columbia to generally between 50 and 60% on the Fraser drainage and other major salmon rivers. A curious feature of the study was that while adult males and females registered similar ratios, suggesting that people with ready access to salmon obtained between one half to two thirds of their protein from salmon and other anadromous fish, the children had less salmon in their diets than the adults (Ibid: 103).

In addition to anadromous fish, freshwater fish such as trout (*Salvelinus malma, Salmo gairdneri*) and whitefish (*Coregonus clupeaformis, Prosopium williamsoni*) (Scott and Crossman 1973) were seasonally important. Deer, predominantly mule deer (*Odocoileus hemionus*) rather than white-tailed deer (*Odocoileus virginianus*), were probably the single most important big game source of protein. This generalization must be tempered with an appreciation of the uneven distribution of big game species throughout the Canadian Plateau and, in particular, ungulates such as mountain goat, mountain sheep, caribou, and elk (Banfield 1974). Based upon both historical documentation and archaeological evidence from the Lillooet region, for example, the seasonal subsistence pattern involved the fall storage of dried salmon followed by deer hunting and then people moved into the pit houses during the cold months to subsist on stored food until spring when the collecting of edible plants took place followed by berry collecting in mid to late summer and then back to the salmon fishing of late summer (Hayden and Spafford 1993: 108-110). In contrast, such a subsistence sequence does not apply to the Kootenay region with its complex topographically determined ecology and wide range of species. Deer, elk, mountain goats, mountain sheep, and salmon were the most important food animals (Choquette 1987: 111). Both deer and mountain goat were hunted communally using pounds, nets, and snares. Although there is evidence of the collecting of freshwater mussels (*Margaritifera* sp.) as early as 1,500 BC, use of shellfish appears to increase from AD 1 onward despite local native denials that they ever ate shellfish (Mohs 1981: 71). On occasion, faunal evidence suggests that virtually all animals were hunted or trapped. At the 1,000 BC Van Male site on the South Thompson River, for example, mule deer and snowshoe hare (*Lepus americanus*) were the two most important species although dog, wolf, striped skunk, porcupine, beaver, field vole, and possibly moose and red fox were also present (Wilson 1980: 86).

It is probable that, like their descendants at the time of European contact, the Late Plateau culture people had a broadly based and balanced diet. Methods of processing and storing both animal and plant foods for winter consumption, however, has undoubtedly left much of this evidence either archaeologically invisible or as a very inadequate reflection of what actually was consumed and in what quantities.

Settlement patterns:

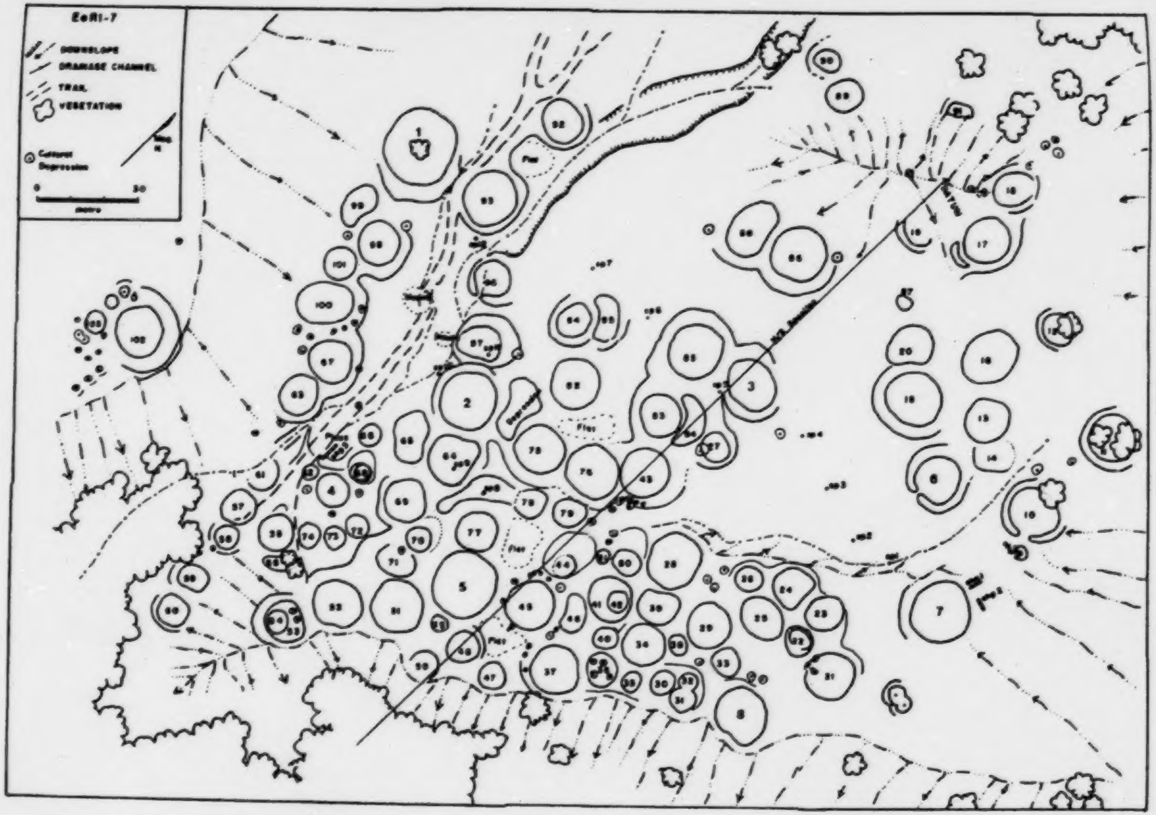
The large winter villages in the river valleys of both the Canadian and Columbia plateaus have attracted considerable archaeological attention. Such villages first appear in Middle Plateau culture times but it was not until Period IV that they became a common phenomena across most of the Canadian Plateau. It appears that at least some features of these pit house villages, including the pit houses themselves, diffused from the Columbia Plateau to the Canadian Plateau rather than the reverse, although the 3,000 BC pit house at the Mauer site on the lower Fraser River (LeClair 1976) has led to the suggestion of a coast to interior diffusion route (Fladmark 1982: 130). Such a possibility is unlikely given the absence of early pit houses on the coast. Accepting a south to north diffusion route from the Columbia Plateau to the Canadian Plateau, for the moment, there is evidence that the first villages were established on the Upper Columbia River as early as 3,000 BC and occupied areas rich in game and freshwater shellfish. As population densities increased, people modified their subsistence focus by intensifying exploitation of certain foods, such as salmon and plants, and, at the same time, perfected preservation and storage methods (Lohse and Sammons-Lohse 1986). In this scenario, the earliest pit house concentrations were initially based upon specific resource-rich locales and it was this attraction to the river valleys that resulted in the population aggregations that eventually led to the development of the winter pit house village pattern across both plateaus. Development and intensification of increasingly efficient salmon fishing and plant harvesting processing and storage methods (Ames and Marshall 1980; Nelson 1973) were probably later achievements. A major problem with the foregoing hypothesis is that, from earliest times, the river valleys were very likely regions of concentrated food resources that would have attracted hunters and gatherers. Other factors than simply rich, local riverine areas must have been involved in the evolution of the pit house villages. Improvements in food processing methods would have been necessary as populations increased and villages were forced to extract increasingly large stores of winter food from an essentially unchanging resource base. In this respect, greater advantage would have had to be taken of the opportunities presented by seasonal periods of superabundance, whether it be in the form of salmon or roots. Given the complex physical geography of the Canadian Plateau, considerable variability can be expected in the importance of different resources in the winter food supply. What is apparent is that both increasing sedentism involving the seasonal coming together of large numbers of people into villages and, as a consequence, increasing social complexity, are hallmarks of Period IV in the Canadian Plateau. It is speculated that since earliest times people in the Canadian Plateau, as well as most other regions of Canada with harsh winters, relied upon stored foodstuffs to carry them through the coldest months of the year. If, prior to the development of the river valley villages, people had dispersed in winter as family groups using a variety of dwelling forms that did not involve the pit house then the archaeological evidence would be extremely difficult to detect. The evolution of the pit house village must have been a lengthy one and undoubtedly involved a large number of interrelated cultural factors that acted as their own driving force to produce cumulative changes.

Winter pit house villages represent the most striking single archaeological feature of Late Plateau culture. In fact, excavation has so concentrated on these villages that there has been some justifiable criticism that the much longer warm weather settlement patterns have been largely ignored. There is the additional problem that, as most of the villages represent hundreds and even thousands of years of seasonal occupation and many of the pit houses were reoccupied and modified by subsequent occupations, much of the archaeological evidence is hopelessly mixed. It has been suggested that until 500 BC the scarcity of upland sites indicates that subsistence activities were concentrated in the river valley bottoms close to the pit house base camps (Richards and Rousseau 1987: 30). This proposal of a significant change in how people seasonally distributed themselves across the landscape, however, is weakened by both the relatively limited amount of archaeological survey that has been carried out in the uplands and the spartan nature of cultural debris from upland sites making temporal assignments difficult or impossible. While a great deal of attention has been directed towards the winter pit house villages, due both to their visibility and productivity of certain types of information, people would have spent three quarters of the year away from the winter villages in temporary dwellings such as the mat covered structures described by early European observers. It is knowledge of this major seasonal segment of Late Plateau culture settlement patterns that is so sorely lacking and is likely to remain so.

Usually the elaboration of salmon fishing, processing, and storing methods have been considered as the economic foundation upon which the increased sedentism reflected in the winter villages rested (Fladmark 1986). In this sense, it has been observed that population concentrations correlate with accessibility to salmon (Fladmark 1982: 137). The best locales for the summer to fall salmon fishery would have been river canyons, narrows, and falls. Such areas were also ideal for wind drying fish fillets. Unfortunately much of the archaeological record at such locales has probably been flushed down river with the spring runoff. While accessibility to salmon was undoubtedly an important settlement consideration, it was but one of a number of complimentary resources that were essential for the well being of the community; particularly during the winter months.

During the Shuswap horizon from 2,500 to 500 BC, circular to oval pit houses, lacking encircling earth rings, range from 7.6 to 16.0 m in diameter with an average of 10.7 m. House pit depths average just under a metre, dwellings are flat bottomed with steep sided walls, and hearths, storage and oven pits are present. A domed log superstructure would have supported an earth roof covering, although this inference, based upon historical documents, becomes questionable when applied to dwellings with very large diameters. While there are records of ground level side entrances, most dwelling entrances were presumably through a hole in the centre of the roof. In the subsequent Plateau horizon from 500 BC to AD 800, house pits of circular to oval form range from 4.0 to 8.25 m with an average of 6.14 m except in the Mid-Fraser region where they range from 8.0 to 11.6 m with an average of 9.9 m. A recently excavated pit house at the Keatley Creek site measured 19 m in diameter (Hayden and Spafford 1993: 124) and note of a dwelling 25 m in diameter is made (Ibid: 106). Peripheral earth rings are absent and side walls are steep, floors flat, and house pits average .7 m in depth. Central hearths and 2.0 to 4.0 m diameter cooking and storage pits occur near the wall edges. A bench less than 1 m in width was excavated along the periphery of the house wall. In some instances, central hearth locations suggest the existence of entrances through the centre of the earth covered house roof (Richards and Rousseau 1987). Abundant evidence of processing and manufacturing activities exists immediately outside of the houses but mirrors the materials found inside (Carlson 1980: 121). Ethnographic records note that, while the pit house villages were basically winter dwellings, elderly people with reduced mobility frequently stayed in them throughout the summer (Kennedy and Bouchard 1978: 37).

Some villages are of considerable size, such as one in the Chilcoten area with more than 100 house pits, some from 12 to 15 m in diameter (Magne 1985), or the Keatley Creek site north of Lillooet with 115 house pits (Hayden and Spafford 1993: 112; and Figure 91). As has been noted, reuse of pit houses was a common practice. A house at the Mitchell site near Lillooet, for example, possessed three stratified living floors (Stryd 1980). At the nearby Keatley Creek site, occupation of the larger house pits are estimated to have spanned more than 1,000 years (Hayden et al. 1996). Given the reuse and periodic modification of pit houses, it is naturally difficult to estimate population sizes for any single period of winter occupation. It has been speculated with reference to the Keatley Creek site, however, that if the large houses and just some of the smaller ones were occupied at the same time then a population between 500 and 1,000 was possible (Hayden and Spafford 1993: 114).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DOWNSLOPE
DRAINAGE CHANNEL
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VEGETATION
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FIGURE 91: THE KEATLEY CREEK SITE NEAR LILLOOET Note the variability in pit house dimensions at this large winter village occupied in Period III and not abandoned until part way into Period V. (Reproduced from Hayden and Spafford 1993: Figure 4 with permission)

Houses are usually arranged lineally along the edge of a river terrace (Carlson 1978) but can also occur as clusters. Small pit depressions, frequently associated with pit house villages, have been interpreted as sweat lodges (Wilson 1972: 190) although other functions such as menstrual huts, storage facilities, and bake ovens are other possible uses. Isolated from the pit house village proper but undoubtedly associated are areas of concentrated cache pits numbering as many as 45 pits. Such pits contain very little material (Ibid: 193) and are likely emptied storage pits. Fire may have been a hazard, as indicated by numerous instances where houses were burned (Borden 1952; Hayden and Ryder 1991: 56; Wilson 1972). On the other hand, it is recorded by ethnographers that fires were often started in houses to ride them of vermin such as insects, rodents, and rattlesnakes. The high instance of carbonized ponderosa pine and Douglas fir needles from houses 3 and 7 of the Keatley Creek site (Lepofsky et al. 1996: Table 1) is suggestive of a vermin-ridding 'flash fire' that would do little or no damage to the main house structure. Certainly no one in their right mind would use an explosive combustible material like conifer needles as a house fuel.

The Keatley Creek site will be considered in some detail in the section in this Chapter on **Inferences on society** as the site was excavated with the specific research design of attempting to identify the nature of corporate group development and ultimately ranked societies (Hayden 1992; Hayden and Spafford 1993). Suffice to note here that the site contained 115 pit houses, some as large as 25 m in diameter. Three similar contemporaneous large villages are located in the same general area and three others have been destroyed. As well, there are or were numerous villages of lesser size in the area (Ibid: Figure 2). Keatley Creek village is situated 360 m above the Fraser River on a well drained ancient river terrace. The 115 pit houses have a bimodal diameter distribution with peaks of 7 m and 15 m. Some very small pit depressions are interpreted as storage, roasting, or dwelling features. The site, as with other nearby large villages like the Bell and Bridge River sites, was first occupied during the Shuswap horizon and was abandoned around AD 1000. A majority of the radiocarbon dates from all three sites, however, are later than AD 500 and thus fall into Period V (Hayden and Ryder 1991: Figure 7). Abandonment of Keatley Creek village and the other large villages in the area has been convincingly attributed to a massive down river landslide that dammed the Fraser River thus blocking the salmon runs for a prolonged period (Hayden and Ryder 1991). This abandonment speaks eloquently of the importance of the salmon runs to the large village concentrations in the Lillooet region as does the subsequent avoidance by people of the former villages after the Fraser finally breached the slide debris and the salmon could once again proceed upriver. It appears that the ancestral villages had become taboo places after the consequences of the AD 1000 slide.

It has been estimated at the Keatley Creek site that each person had 2.5 m^2 of living space in a pit house (Hayden et al. 1996a) and that human body heat was an important consideration with regard to house warmth, particularly in the smaller and assumed poorer dwellings. A large pit house, with a diameter of 19 m, is believed to have housed as many as eight nuclear families representing around 45 people who occupied separate domiciles, each containing hearths and storage pits. Small houses with 7 m diameters are believed to have held 2 to 3 nuclear families while medium sized houses of 14 m in diameter contained approximately 5 to 6 nuclear families. The large village sites in the Lillooet region were situated at prime locations for both the capture and drying of salmon. With salmon as a trade item, they were also ideally situated to benefit from and control the trade between the coast and the interior. Increasing social complexity is regarded as product of these natural advantages which came to a sudden end in AD 1000 when a landslide blocked the arrival of the salmon upon which the wealth and prestige were based (Ryder and Church 1986).

The 1,000 to 500 BC Pit House 2 at the Lochnore Creek site (Sanger 1970) was one of four houses making up a small village. House Pit 2 had been subjected to a number of modifications throughout its period of occupation causing considerable mixing of cultural deposits. Oval in shape, measuring 11 by 9 m and 2 m deep, the house possessed stepped side walls and a rectangular central hearth demarcated by fire cracked rock. A stone retaining wall had also been built against the uphill side of the house to prevent slumping. Exterior storage pits were associated with the dwelling. Such pits first appear around 2,000 BC and are assumed to have been used for the storage of dried salmon (Fladmark 1986: 129). Contrary to the norm, the Van Male site on the South Thompson River is regarded as single occupation consisting of a number of small pit houses surrounding a larger house (Wilson 1980). Such a dwelling arrangement raises the possibility that one house was made larger in order to accommodate gatherings during winter ceremonies.

Villages vary in size and characteristics by region and, therefore, a brief review is necessary. Most information on the large pit house villages comes from the Mid-Fraser River region. Here pit houses tend to be larger than elsewhere, with average diameters of approximately 10 m but capable of reaching diameters of 25 m. Such exceptionally large structures have been regarded as evidence in support of the development of social complexity wherein certain elite corporate groups acquired special social status (Hayden et al. 1985). Another explanation for house size differences is that the larger houses were those of village chiefs where extra space was required to accommodate gatherings during winter ceremonies. If, as historically documented, some of the large villages were composed of a number of different bands that came together for the winter (McMillan 1988: 155) then it could be expected that some of the larger houses pertained to different band chiefs who required extra space for ceremonies. In this region, villages are located on well drained ground near potable water and sheltered from the winter winds. Evidence of interaction with coastal groups also appears to have been more intensive here than elsewhere on the Canadian Plateau. Survey of the South Thompson River basin revealed that of the total of 192 sites 75% occurred on the flood plain and 25% on the terraces bordering the river. Also, 65% of the sites were on the north side of the river in order to reap the benefits of a southern exposure during the winter months (Mohs 1981). It has been further noted that "The entire length of the north shore floodplain of the South Thompson, between Kamloops and Chase, contain concentrations of archaeological sites, most of which are winter habitation pithouse and cache pit sites, and it is often difficult to establish individual site boundaries" (Wilson 1974: 163). This involves a 48 km stretch of the river.

Not all dwellings during Period IV in the Canadian Plateau can be classified as pit houses. The living floor of the Natalkuz Lake house in the northern portion of the Canadian Plateau, for example, was at ground level. This 500 BC house was 10.4 m in diameter and, to judge from the surviving sidewall post angles, stood approximately 3 m high (Borden 1952). An oblong pit, measuring 2 by 3 m and nearly 1 m deep, contained two hearth pits at either end suggesting the dwelling was occupied by at least two families. Sites in the area tended to be "...located at the head or outlet of lakes, near marshes or game crossings, in sheltered bays or coves with sandy beaches, and near head lands affording a sweeping view of the lake" (Borden 1952: 34). It is also noted that most sites occur along the north sides of lakes in order to take advantage of a southerly exposure. In the Anahim area, single to groupings of four circular pit houses 4 m in diameter and 20 to 45 cm deep occur along lake shores and river banks. The dwellings lack evidence of superstructures and only contain rare interior features such as pits and rock piles (Wilmeth 1978a). Tezli village (Donahue 1975) at the eastern end of West Kluskus Lake, also in the northern portion of the Canadian Plateau, contained more than 44 pits, most representing house pits, which spanned a period from 2,400 BC to AD 1400. Houses were up to 11 m in diameter and 1.5 m deep with apparent side entrances (Donahue 1975: 26). It is of interest that the earliest house, Pit D, was also the largest. The village occupied both sides of a stream at constrictions where fish weirs could be built.

In the Arrow Lakes region of the southeastern Canadian Plateau pit houses occur along the shores of the major lakes and rivers. Pit house sites decrease in frequency to the north. Circular to oval and even rectangular shaped houses with steep side walls angling from 35° to 50° contain small storage pits near the wall-floor juncture, a central hearth, and lack evidence of roof superstructure. Also present are basin-shaped house pits containing very little refuse and inferred to be temporary dwellings (Turnbull 1977).

Settlement size varied from 1 to 3 dwellings, 4 to 7 dwellings, or more than 10 dwellings, arranged parallel to the shoreline. Allowing for multiple occupation of sites it is inferred that the average village consisted of less than 7 dwellings, some with associated sweat lodges. As elsewhere, the north sides of lakes were preferred in order to take advantage of winter exposure to the sunlight. An interesting feature of the Arrow Lakes distribution of pit houses is that it clearly correlates with the availability of salmon. Pit houses, for example, do not occur on Kootenay Lake immediately to the east where a major waterfalls on the lower Kootenay River blocked salmon access to the Lake (Turnbull 1971). Paradoxically, both pit house villages and salmon were present 110 km further east in the Windermere and Columbia lakes area of the headwaters of the Columbia River (Borden 1956). In the Okanagan Valley west of the Arrow Lakes there is little evidence of human occupation until 1,000 BC when pit houses suddenly appear at salmon fishing locales. This event has been interpreted as an actual migration into the area of a Mid-Fraser region population (Grabert 1971:155). An unusual 1,000 BC ovate house was 10 m long with six support posts and 3 lineally arranged hearth floors (Grabert 1971). Most of the early houses, however, are 7 m in diameter with 4 or more supporting posts and also appear to have been multi-family dwellings.

In the Kootenay region of southeastern British Columbia around the beginning of Period IV a major settlement pattern shift away from that of the earlier Goatfell and Bristow complexes took place with the earlier upland orientation being replaced by a riverine orientation (Choquette 1987: 99). There was also a shift away from exploitation of the relatively close Goatfell and Harvey Mountain stone quarries to the more distant Kootenay argillite which, however, could be readily transported down the Kootenay River by canoe. Period IV Inissimi complex sites are located on river terraces associated with river confluences and outlets as well as large rapids and eddies and are characterized by an abundance of fire fractured rock. It is suggested that the development of water transportation represented a major break by the Inissimi complex from earlier times. Thus "The Inissimi complex settlement pattern probably consisted of a late fall to early spring inhabitation of the middle Kootenai Valley, a summer focus on the salmon fishery of the lower Kootenay River, and spring and fall travel with accompanying resource exploitation (plants, other fish, game) along the Kootenai and its tributaries" (Choquette 1987: 115). Flexibility within this pattern was essential in order to respond to fluctuations in resource availability. Pit house villages are rare in the Kootenay area, being represented by as yet unexcavated sites on the Windemere and Columbia lakes on the headwaters of the Columbia River (Borden 1956). Normally sites in this region consist of a thin veneer of cultural debris along terrace edges overlooking rivers with features being limited to the odd hearth and chipping floor (Blake 1981).

Settlement pattern studies in the Canadian Plateau, as elsewhere in Canada, have to some degree suffered from a lack of intensive regional surveys intended to identify the full range of human activities throughout any particular region for the entire year. The reason for this uneven treatment has been a bias towards the artifact-rich winter village sites as opposed to the "...small, limited activity sites" (Pokotylo and Froese 1983: 127) of the uplands and other locales. An exception to the foregoing has been the research carried out in the uplands of the Upper Hat Creek Valley in the South Thompson River drainage. Of the 223 sites located, 80% consisted simply of lithic scatter, 7% contained root roasting pits, and 13% had both lithic scatter and roasting pits and one site contained house pits. Sites with roasting pits were situated near water in areas with abundant edible plants (Pokotylo and Froese 1983). On the reasonable assumption that subsistence and settlement pattern activities are to some degree reflected in the processes of stone tool manufacture and use, new methods are being developed to provide more complete interpretation of the lithic scatter from the veneer uplands sites (Pokotylo 1981). Sites with considerable chipping detritus variability, for example, tend to be associated with a broader range of resources and settings than sites characterized by either initial or final artifact manufacturing stages (Ibid: 391). Stone tool manufacture, repair, and discarded detritus appear to correlate with different settlement pattern activities. As lithic technology is "...largely embedded in settlement strategies, lithic remains can be expected to change as the operations of settlement and subsistence systems change..." (Magne 1985a: 261). Ideally small assemblages, representative of limited time, provide the kinds of component information that are best suited to construct certain aspects of culture history but unfortunately, all too often, the samples are too small to be considered representative for general comparative purposes.

Late Plateau culture quarry sites tend to be rare. Rock suitable for fashioning tools is readily available throughout most of the Canadian Plateau in the form of cobbles, particularly of basalt. The abundance of chipping debris on most sites is a reflection of the limited need to conserve the raw materials used in stone tool manufacture. Quarry sites, like the Top of the World (Choquette 1981), were considered in the section on **Technology**. Other sites, such as the 500 BC Marron Lake site in the Okanagan region (Grabert 1971), with its abundance of preforms and detritus, undoubtedly reflect the close proximity of chert, agate and basalt outcrops.

Cosmology:

Associated with pit house villages are smaller pits that have been interpreted as serving a number of functions including that of sweat lodges. It is historically documented in the Canadian Plateau that small sweat lodges were used by adults to purify themselves

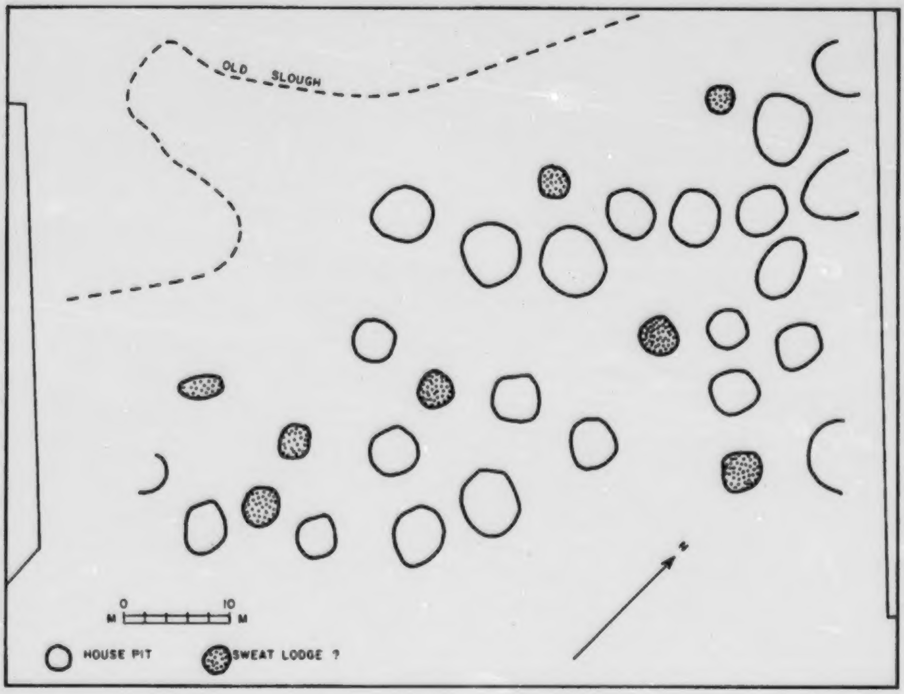
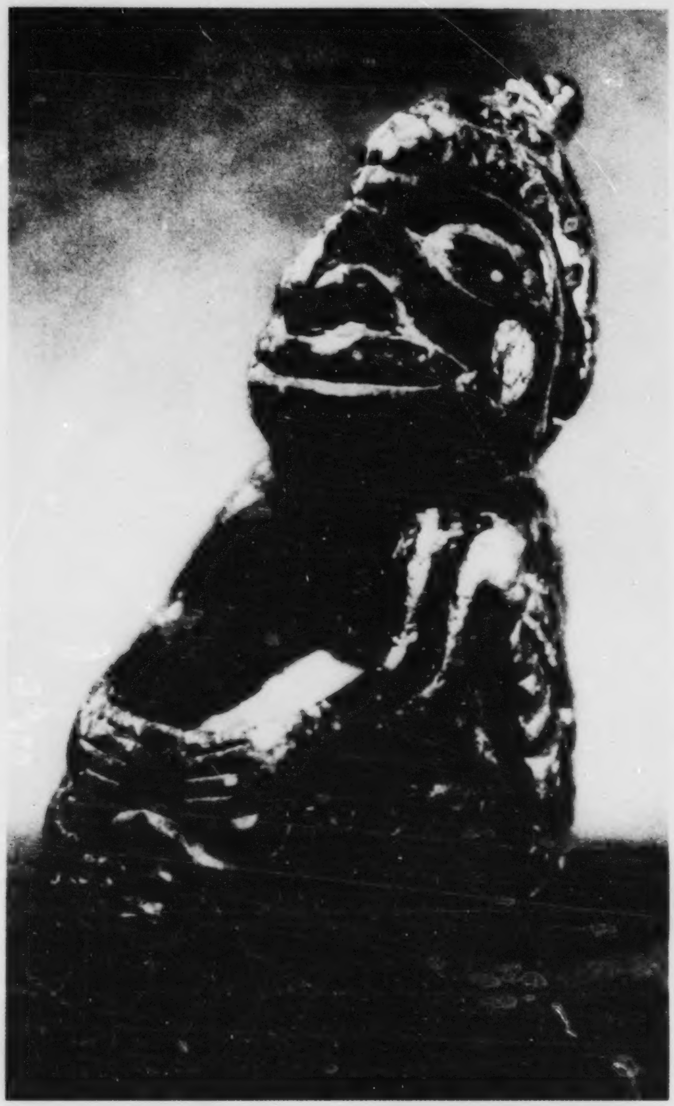


FIGURE 92: FLOORPLAN OFTHE KAMLOOPS RESERVE SITE The floor plan shows the distribution of possible sweat lodges, as well as other special function pit features, in relationship to pit house dwellings. Dated to 2,000 years ago only 10% of this large village survived parking lot construction. A sweating function is inferred for pit features too small to be dwellings and containing abundant fire fracture rock resting on a large quantity of charcoal. Sweat lodges are distinguished from roasting ovens by their lack of food bone refuse and other detritus. Early observers noted that sweating in small lodges heated with hot rocks was a common practice in the Canadian Plateau. People used the sweat lodges to purify themselves prior to feasts and religious ceremonies. In addition, note the uniform house pit size at this site in contrast to those on the Keatley Creek site floor plan given in Figure 91. (Adapted from Wilson 1972, Figure 65. Drawn by Mr. David W. Laverie)

prior to religious events and by youths during their fasts in search of an all important guardian spirit (Jenness 1955: 355). Given the religious function of the sweat lodges, it is appropriate that they be considered in this section rather than under **Settlement patterns**. One such sweat lodge at the AD 1 Kamloops Reserve site was a 2.5 m circular depression that contained a "...concentration of rock..." underneath which "...a large quantity of charcoal..." was found (Wilson 1972: 190).

In many pit house villages some of the houses are considerably larger than others. It has been suggested that the large structures were occupied by groups with a higher social status than those occupying the smaller houses and represent evidence of the existence of, at least, partially ranked societies or societies in the process of formalizing a ranking system (Hayden et al 1985). Both large and small pit houses, however, contain basically the same kinds and frequencies of tools and types of refuse and, in this respect, are more characteristic of egalitarian societies. An alternate, or possibly complementary, explanation for the larger pit houses is that they were the dwellings of chiefs who required larger quarters to accommodate numbers of people during winter ceremonies. It is historically documented that the Lillooet potlatch ceremony, the most important of ceremonies, was carried out within a single pit house (Kennedy and Bouchard 1978: 49).

Near the end of Period IV in the Kootenay region there is a noticeable shift away from opaque-dark silicas in favour of vitreous-translucent varieties of chipping stone (Choquette 1981: 34) while throughout much of the Canadian Plateau the shift was to vitreous basalt. These changes appear to correlate with the introduction of the bow and arrow and are possibly indicative of symbolic significance being attached to the particular stone used for the killing tips of the new weapon system. A similar phenomena has been noted elsewhere in Canada where the introduction of the bow and arrow was intimately associated with a specific variety of high quality chert such a western Onondaga chert early in Late Great Lakes-St.Lawrence culture, Hudson Bay Lowlands nodular chert in Late Western Shield culture, and Knife River chert in the Besant complex of Late Plains culture. Another trait that makes its appearance in Period IV are seated human figures holding a bowl. Carved from soapstone, such figures have been discovered in the Mid-Fraser region (Duff 1975). It has been speculated that these striking sculptures were symbolic representations of the human state as it related to life-death-power wherein their creators metaphorically sought "...order, balance, mediation, wisdom" and were used "...as ritual and divining vessels by shamans and ritualists" (Duff 1975: 52). The seated figures are generally found in accidentally exposed graves in locales isolated from villages. Carvings in base relief on some of the figures are "...frogs or toads and lizards as well as rattlesnakes..." (McMillan 1988: 152). The former may have been of particular significance as stylistic frog/toad representations appear on the ends of stone pestles present as a minor item throughout the entire Plateau Pithouse tradition (Richards and Rousseau 1987: Figure 17p and Figure 23x). The Figure 23x pestle is of the same style and from the same site as the pestle illustrated in Figure 88 and may even be the same item but artistic licence has obscured the fact. Whereas Figure 23x in the Richards



COLOUR PLATE XVIII: LATE PLATEAU CULTURE SCULPTURE Found in a pit house village at the juncture of the Fraser and Thompson rivers near Lytton, the sculpture likely dates towards the end of Period IV. It has been suggested that "The depictions of ribbed humans in conjunction with rattlesnakes, toads and frogs and other reptilian forms is strongly indicative of shamanism and curing" (Carlson 1983c: 201-202). The human figure probably represented the shaman and the rattlesnake and frog/toad his spirit helpers. (Reproduced with permission from Fladmark 1986, Colour Plate VIII) and Rousseau publication is attributed to the Kamloops horizon, the Figure 88 pestle is attributed to the Plateau horizon on the basis of the projectile point styles from Zone I of the Lehman site and the single radiocarbon date from the upper zone of the site (Sanger 1970: Table LIV). In the final analysis, we must be satisfied with the likelihood that the sculptures are sacred images whose ultimate meaning and that of their associated symbols we will never know (Colour Plate XVIII).

While it has been observed that between 500 BC and AD 500 elaborate offerings appear in graves such as "...large nephrite adzes; bone, antler and steatite carvings; digging stick handles; rare pieces of native copper; and a wide range of other artifacts" (Fladmark 1986: 139) the actual published evidence of such recoveries is quite limited. In the Shuswap horizon of 2,500 to 500 BC flexed burials beneath house pit floors have been recorded (Richards and Rousseau 1987; Sanger 1966). In one of these instances, eight individuals were involved but grave offerings were absent except for red ochre. Of course, in all likelihood perishable objects would have been included with the deceased. Another burial had been covered with large boulders. Charred human bone in hearths outside the pit houses is likely an indication of cremation. In the 500 BC to AD 800 Plateau horizon occupation of the Government site four partially cremated children had been richly provided with offerings that included polished nephrite adzes, large bifacial preforms, numerous oblong bone beads, antler digging stick handles, stone netsinkers, and marine shell dentalium beads (Smith 1900: 436). At Lillooet, a woman had been buried 1,500 years ago in a flexed position in a birch bark lined grave. Birch bark (*Betula papyrifera*) was extremely important in the Canadian Plateau for manufacturing canoes, baskets, and for a wide range of other uses including lining graves and covering the body (Turner 1992: 195-199). Birch bark was particularly important among the Thompson Indians for preserving stored food (Turner et al. 1990: 189-190) as it was for the Ojibwa of eastern North America who associated the barks' resistance to decay with special preservative qualities. A cairn composed of three boulders, located a short distance to the east of a 1,000 to 500 BC pit house at the Lochnore Creek site on the Fraser River drainage, marked the location of a crushed human skull lacking its jaw (Sanger 1970: 27). While Sanger believed the feature represented a burial where soil leaching had dissolved the rest of the body it is difficult to understand how the skull could be preserved by the protecting boulders and not the jaw and some of the cervical vertebrae. An alternative explanation would be that the feature represents exactly what was found, a buried skull marked by a cairn but whose significance is unknown. Many Late Plateau culture cemeteries and burials have been destroyed by a combination of recent earth moving activities, the creation of reservoirs, and plundering by curio seekers.

A mystery is why the large pit house villages around the juncture of the Fraser and Thompson rivers, like Keatley Creek, that were abandoned at AD 1000 because a landslide had blocked passage of the salmon (Hayden and Ryder 1991: 63), were not reoccupied after the Fraser River had cleared the landslide rubble and salmon would have once again been available. Had the areas of salmon concentration in the River changed or had these large villages, that had been occupied for more than a thousand years, become taboo places in remembrance of the disaster that had befallen their former occupants? A consideration of salmon distributions today in the area of the former large villages could possibly throw light on this speculation. The possibility that some catastrophe could have resulted in a village site becoming taboo might explain why some pit house villages in Period IV, such as the Kamloops Reserve site, were only occupied for an apparently short period of time and were not reoccupied.

External relationships:

Late Plateau culture was flanked on the east by Late Plains culture, on the west by Late West Coast culture, on the north by Late Northwest Interior culture and, on the south, by a related culture in the Columbia Plateau.

The relationship between Late Plateau culture and Late Plains culture is currently clouded by the relatively limited amount of published information from southeastern British Columbia and the heavy reliance that has been placed upon projectile point typology to establish cultural relationships. In the latter respect, Late Plateau culture technology, up to approximately 500 BC, included among their projectile points some weapon tip styles similar to those of Late Plains culture. This refers to the Oxbow to McKean to Duncan to Hanna sequence of projectile point styles which was apparently adopted from the east (Richards and Rousseau 1987). Around 500 BC, corner-notched and basally notched projectile points, most similar to those of the Columbia Plateau, become dominant. Various lanceolate, bipointed, and stemmed point forms are maintained throughout the preceding projectile point style changes. The basally notched and, in particular, corner-notched dart heads of the Plateau horizon have often been equated with the Late Plains culture Pelican Lake complex dartheads (Richards and Rousseau 1987: 40) but this vaguely defined projectile point form is widely distributed, occurring on the southern coast of British Columbia as well as in the Columbia Plateau from where it was most likely introduced into the Canadian Plateau. The use of certain point forms to suggest cultural connections is fraught with problems. For example, some projectile point types are of such a poorly defined nature, such as is the case with the Pelican Lake corner-notched point, as to be of questionable utility in establishing relationships between cultures. A systematic examination of the metrical and form attributes of all of the corner-notched points that have been called Pelican Lake would undoubtedly reveal significant differences between the corner-notched points of the Plains and those of the Canadian Plateau and elsewhere.

From approximately 300 BC to AD 500 there is increasing evidence of trade from the Canadian Plateau into the Plains involving *Olivella* and *Dentalium* marine shell beads that would have been obtained from Late West Coast people on the southern coast. Some nephrite, Kootenay argillite, and Top of the World chert was also traded eastward. There is no clear evidence of reciprocity from Late Plains culture and it is probable that perishable objects, such as bison robes, were involved. Even during Period III times occasional shell objects from the Pacific Ocean found their way onto the Plains and must have passed through Canadian Plateau intermediaries.

Despite a tendency to equate the Kootenay region with Late Plains culture on the basis of certain projectile point forms and the bison hunting lifestyle of the historically documented Upper Kootenay, substantive evidence in support of these assumptions is not available in print. It has been commented that there is increasing evidence of Late Plains culture influences into the Upper Kootenay region around 2,000 years ago (Choquette 1981: 28). However, certain traits, such as pestles, stone bowls, and the presence of pit house villages on the headwaters of the Columbia River at Windermere and Columbia lakes (Borden 1956), would suggest the region was occupied at some time by Late Plateau culture people. Even the distribution of Top of the World chert in extreme southeastern British Columbia was mainly to the south and west rather than to the north and east (Choquette 1981: 27) suggesting the quarries were more likely under Late Plateau culture control than that of Late Plains culture people. On the other hand, Purcell siltstone from within the Kootenay River loop is not found to the west but is abundant along the eastern slope of the Rockies. This has led to the suggestion that a cultural division "...has existed between ancestral Kootenays and salmon fishing people for thousands of years" (Ibid: 32). Kootenay argillite from the north end of Kootenay Lake is also commonly found on the eastern slope of the Rockies suggesting possible Late Plains culture involvement. Whether the Kootenay are the in place descendants of Late Plateau culture, Late Plains culture, represent a distinct regional population, or are the result of a late spread of Plains culture people over the Rocky Mountains into the Canadian Plateau will not be clarified until more fully quantified and qualified information becomes available. The situation is further complicated by the frequent Plateau culture traits found in the Lower Kootenay west of the Purcells in contrast to the Plains traits of the Upper Kootenay to the east where bison were once available. The pit house villages in the Windermere and Columbia lakes region have not been excavated or, at least, not reported upon, but they have been assumed to represent a penetration of Salish-speaking peoples into the area during the time of European contact

(Borden 1956: 81). There is as yet no archaeological basis for accepting this assumption. It is also worth noting that the headwaters of the Columbia River represent the furthest upstream penetration of salmon on the River. Further south, other pit house villages are limited to the loop of the Columbia River between the Lower Arrow and Slocan lakes, a distribution that clearly correlates with the availability of salmon (Richards and Rousseau 1987: Figs.15, 18, and 21).

Late Plateau culture relationships with Late West Coast culture appear to have been quite variable across the Canadian Plateau. There is considerable evidence of contacts between the coast and the Mid-Fraser region but very little evidence further east (Richards and Rousseau 1987: 13). A coastal innovation transferred to the plateau was the composite toggling harpoon with two lateral valves that held the piercing tip in place (for an illustration of this weapon system see Fladmark 1986: Plate 18). The trade in nephrite and steatite to the coast from the Lillooet-Yale region was associated with expanding trade in dried salmon beginning around AD 1 (Fladmark 1986: 137). Marine shell beads were also represented in this trade. Between 300 BC and AD 500 the trade in such items as polished nephrite adzes from the interior for marine shell beads from the coast increases and the intensification of contacts have been used to explain cultural differences in the Mid-Fraser region Late Plateau culture from the rest of the Canadian Plateau (Richards and Rousseau 1987: 39). Indeed, the Lower Fraser River below Hope appears to be more closely related to the coast than to the plateau (Richards and Rousseau 1987: 21). At the time of European contact, berries, hemp, skins, and goat wool from the interior were traded for shells, slaves, and dug out canoes from the coast (Jenness 1955: 351) but of these only the marine shell would be recognized in the archaeological record. There are reasons to suspect the former existence of a major trade fair near the Hope-Yale region which was equivalent to the Dalles fair on the lower Columbia River. Such trade fairs, in addition to their trade function, would have acted as information distribution centres between the interior plateaus and the coast (Wood 1972).

There is little evidence of contact with Late Northwest Interior culture to the north during Period IV. This is somewhat surprising as considerable research effort has been directed to determining when and how the Eyak-Athapaskan-speakers of the north penetrated the Canadian Plateau with elements eventually spreading to the southwestern United States to become the Navaho and Apache. It now appears this major migration took place sometime early in Period V (Richards and Rousseau 1987; Wilmeth 1978a). The foregoing conclusion is contrary to earlier arguments for technological continuity from 2,400 BC to AD 1385 at the Tezli site (Donahue 1975). There is, however, little evidence of a post AD 500 occupation at the Tezli site, which relates mainly to the Plateau horizon of the Late Plateau culture. There is growing evidence that the Eyak-Athapaskan-speaking Chilcoten and Carrier peoples fled south from the effects of the

White River volcanic ash fall from the St. Elias Mountains in the southern Yukon around AD 500 (Moodie et al. 1990; Wilmeth 1978a: 173) and in the process displaced Late Plateau culture people from their northernmost territories. Oral traditions still exist among Athapascan peoples regarding this event (Moodie et al 1990). According to Richards and Rousseau (1987: Table 12), Plateau horizon materials (500 BC-AD 800) were present in the mixed deposits of the Punchaw Lake site (Fladmark 1976) along with later materials attributed to the Carrier thus supporting the replacement of Salish-speaking peoples by Eyak-Athapascan speakers at this 53° 40' north latitude locale. Both the replacement scenario and the latitude accord well with the finding of a similar replacement to the west at 53° 30' north latitude where a late Carrier intrusion into former Late Plateau culture territory is apparent in the archaeological record (Borden 1952: 39). These events will be considered in Volume III but they do help to explain, in part, the limited evidence of contacts with Late Northwest Interior culture to the north during Period IV. There may have been little contact between the two cultural groups until a cataclysmic natural event in the north initiated a major sou[illegible]ward migration of northern peoples in Period V. On the other hand, it is possible that trade connections once existed but that perishable objects were involved although it is difficult to envision what either culture possessed in terms of material goods that was not locally available to both. The latter possibility may even be a major factor in the apparent absence of evidence of north-south interior contacts.

The relationship between the Canadian Plateau and the Columbia Plateau during Period IV appears to have been close. An arbitrary 49° 20' north latitude cultural boundary between the Canadian and Columbia plateaus has been suggested, with the dividing line cutting between the north and south Okanagan valleys. It is recognized that a clinal separation is involved rather than any sharp cultural break (Richards and Rousseau 1987: 20). The Arrow Lakes region of southeastern British Columbia is also recognized as a contact zone between the two plateaus with some cultural blending being apparent. Similarly, in the lower Pend d'Oreille River where it joins the Columbia River, Columbia Plateau and Kootenay influences are stated to dominate over those of the Canadian Plateau proper (Bussey 1981). During the Shuswap horizon from 2,500 to 500 BC the following traits are found in both plateaus: pithouses; exploitation of a wide range of prey (mainly deer, elk and mountain sheep), salmon, and freshwater mussels; a well-developed bone technology (this is debatable for the Canadian Plateau); and the use of spearthrowers and a range of contracting stemmed projectile points (Richards and Rousseau 1987). From 500 BC to AD 500 shared forms of corner and basally notched dartheads appear and were likely originally derived from the Columbia Plateau where they are present around 1,000 BC (Richards and Rousseau 1987: 40). The origin of the pit house in the Canadian and Columbia plateaus has been a matter of some discussion (Ames and Marshall 1980; Lohse and Sammons-Lohse 1986; Nelson

1973). While the evidence is still somewhat equivocal, it is suspected that the pit house style of dwelling and the establishment of winter villages spread from the Columbia Plateau into the Canadian Plateau.

Most internal trade in the Canadian Plateau likely was archaeologically invisible. It is historically documented, for example, that the Shuswap traded dentalia, copper, skin robes of moose, caribou, marmot, and rabbit, snowshoes, and paint to the Okanagan and Thompson River regions in return for certain roots, hemp bark and thread, dried salmon and oil, bags and baskets, and buffalo robes (Teit 1909: 536). Note how very few of these items would survive in an archaeological site.

Human biology:

Little can be said regarding the human biology of Late Plateau culture people due to a scarcity of published information and problematic cultural contexts. Early recognition of a distinctive interior Thompson River human physical type (Boas and Farrand 1899), however, has been supported by recent multivariate statistical analysis of the anthropometric evidence (Hall and Macnair 1972). Given the isolating influences of the topography of the Canadian Plateau and the evidence of a very lengthy in place cultural development such evidence of regional biological groupings are not surprising.

At the Mitchell site near Lillooet the skeleton of a man dated to 600 BC exhibited the following traumas: fractured and fused toe bones; a crushed lumbar vertebrae; a projectile point lodged in the distal left radius of the forearm that was partially absorbed by healing bone; and three partially healed perforations of the left side of the skull likely caused by club blows (Stryd 1980). There seems little doubt that this individual was either a tough old warrior, a very lucky survivor, or both. As the combat resulting in such wounds would likely not be tolerated within the community, it suggests the existence of hostilities between villages or groupings of villages.

Inferences on society:

It has been speculated that a form of hereditary rank may have existed in certain areas occupied by Late Plateau culture. The inference is based upon the presence of rich grave offerings in only some graves (Fladmark 1986: 139-140) and the existence of large pit houses associated with smaller houses with differences in the contents of houses of different sizes (Hayden et al. 1985; Hayden and Spafford 1993; Lepofsky et al. 1996). Large pit houses in the Mid-Fraser region have been attributed to corporate groups who exercised control over a range of resources and had special social rights in the community. Influences emanating from the ranked societies of the coast are believed to have contributed to the development of social inequalities in certain areas of the interior. It is suggested here, however, that neither lavish grave offerings nor large houses associated with smaller ones necessarily indicate the existence of ranked societies. Hereditary family and restricted group rights to certain resources or resource areas and large houses being associated with smaller houses do not necessarily, of themselves, constitute evidence of the existence of a social hierarchy. This is apparent among the egalitarian farming Iroquoian people of the east where both of these conditions prevailed.

The assumption that the nature and abundance of grave offerings may indicate rank is highly suspect. In most hunting and gathering societies in Canada there is an absence of the kind of prescribed patterning one would expect if the grave objects actually represented rank-related symbols within a socially stratified society. Indeed, some of the earliest hunting cultures across the country had the most elaborate mortuary practices, including exotic grave offerings, but the type and number of offerings appears to have been mainly a product of individual choice rather than being dictated by social forces beyond the family level. In other words, rank reinforcing ritualistic procedures, as they pertain to mortuary practices, would appear to be absent. There is also the frequently ignored fact that graves lacking offerings could have once been richly provided with gifts but that their perishable nature has denied archaeological detection.

Reservations regarding the point of view that large pit houses represent evidence of a ranked society or, at least, of a society where certain groups had special social privileges and economic advantages, were expressed in the section on **Settlement patterns**. Large pit houses in the interior appear earlier than significant evidence of coastal influence that could have stimulated the development of ranked societies. Even the extent to which the southern coast Late West Coast culture societies were socially stratified at this time is far from being resolved as will be discussed in Chapter 28. There is little in the archaeological record from the interior that cannot be accommodated within historically recorded Canadian Plateau social organization. This consisted of a number of families, grouped by blood and marriage into a band, with a band chief but power likely residing informally in the hands of a group of elders (Jenness 1955). To further complicate the social system, a number of these bands could come together in a single village for the winter (McMillan 1988). While it is apparent that the larger pit houses of Late Plateau culture in the Mid-Fraser River area indicate a more complex socioeconomic pattern than has been historically documented (Pokotylo and Froese 1983: 152), it does not follow that evolving social and economic complexity of corporate groups within a society can be equated with a socially accepted hierarchy of status involving something equivalent to hereditarily determined lower, middle, and upper classes.

The Canadian Plateau is one of the few regions in Canada where an archaeological research project has specifically focused on acquiring an understanding of the processes leading to social complexity. The interpretations resulting from the Keatley Creek site archaeological project (Hayden 1992), however, leave this anthropologist ambivalent in the sense that some of the findings are convincing while others appear to be ethnographic analogies that push the archaeological evidence too far. One thing is certain, the research at the Keatley Creek site cannot be criticized for not taking a broad and innovative look at the archaeological evidence. The quibble here is with some of the interpretations and not with the goals and procedures of the project.

The main hypothesis to be tested at Keatley Creek was that small house pits equalled poor families, medium sized house pits equalled, if you will, the middle class families, and the large house pits equalled the rich families (Hayden and Spafford 1993: 124). Rich families were believed to assert control over the most productive salmon fishing areas in a society where dried salmon equalled wealth (Ibid:137). As can be seen on the Keatley Creek site plan the "...largest housepits are evenly spaced throughout the core of the site and are surrounded by smaller structures, some of which may have been economically and socially attached to, or dependant on, the larger structures" (Ibid: 136; and Figure 91). It is even suggested, with regard to the large and small house associations, that a servant relationship may have been possible. House floor activity areas in the small pit houses, as determined by debris and feature distributions, consisted of butchering and eating adjacent to the hearth, tool manufacturing areas, and areas relatively free of debris. The larger pit houses were characterized by activity zones demarcated by the distributions of hearths and fire fractured rock concentrations, chipping detritus, and artifacts such as scrapers, knives, and utilized flakes. These three activity zones have been classified as outer, central, and inner zones, with the latter occurring in the southern segment of the dwelling. As the large houses, such as House 7, were occupied by as many as eight families or 45 people, most families would each have a hearth and various activities would be concentrated around such hearths in both the outer and central zones of the house. The inner zone in the southern sector of House 7, which generally lacked the usual stone tools and discarded food bones, has been speculated to have been occupied by "...chiefly-like administrators of the residential corporate group..." who "...did very little menial work" (Hayden and Spafford 1993: 133; see Figure 93). It was further speculated that the southern sector of House 7 was further away from the house entrance and was more likely to be warmed by the winter sun (Ibid: 134). However, it is impossible to deduce from the post mould patterns how these large dwellings were roofed. It is most unlikely that the superstructure was simply an expansion of the ethnographically recorded construction method (Lafloret and York 1981: Figures 2 & 3) and thus it is uncertain whether the entrance was through the roof or, indeed, if there even was only a single entrance way.

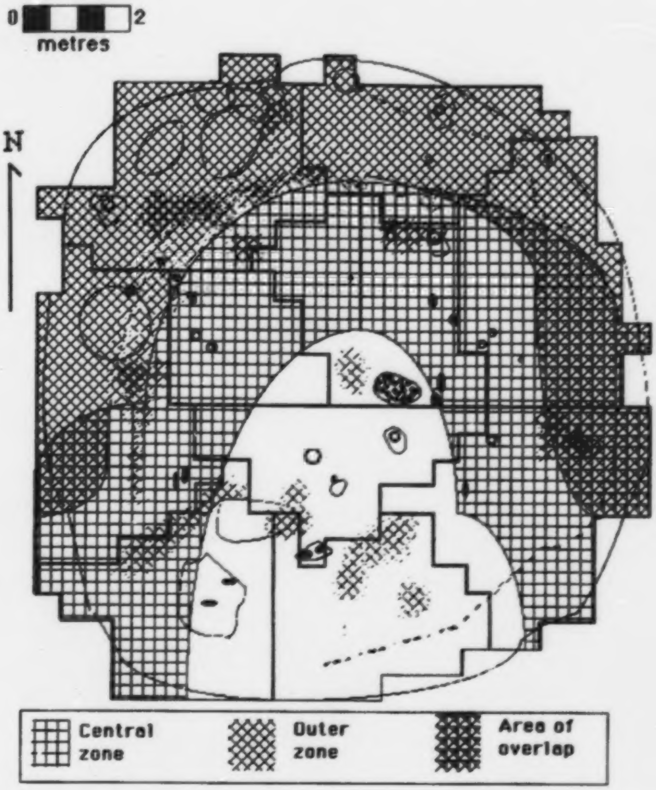


FIGURE 93: USE OF CULTURAL DEBRIS AND ARTIFACT DISTRIBUTIONS TO INFER SOCIAL UNITS IN A LARGE PIT HOUSE On the basis of the distributions of fire-reddened hearth areas, pits, the peripheral bench edge, fire cracked rock and chipping detritus concentrations, utilized flakes and tools, House 7 of the Keatley Creek site was divided into three zones with little evidence of tools or faunal remains in the southern inner zone shown in white leading to the speculation that this section of the house was occupied by the elite of the corporate group. (Reproduced from Hayden and Spafford 1993: Figure 14 with permission)

Detailed analysis of the animal and plant remains recovered from the living floors of small, medium, and large pit houses at the Keatley Creek site suggested certain economic differences related to house size (Lepofsky et al. 1996). It was found that the quantities and varieties of food stuffs did vary with reference to house size. These data were interpreted as evidence that a wider range of activities took place in the larger houses. Distribution of animal remains, but not plant foods, supported the existence of separate domestic groups within the large houses. Some of these groups may represent different levels of economic or social status. Equivalent evidence from the medium and small houses suggested a greater degree of communal activity than was apparent in the larger houses. Limited samples of both animal and plant remains from the small pit house (House 12) are a matter of concern (Ibid: Tables 1 and 2) as is the evidence of abundance and variety of species remains by house structure size that could simply be related to sample size rather than socio-economic factors. A majority of the plant remains identified from both the large and medium sized house pits pertain to inedible items like pine and fir needles. Only the saskatoon berry seeds (*Amelanchier alnifolia*) and chenopod (*Chenopodium* sp.) had any appreciable representation in the large and medium sized pit houses (Lepofsky et al. 1996: Table 1). As preservation of plant remains is a matter of accidental charring and thus an unpredictable phenomena, it is not surprising that the plant evidence was not an effective method to test for hypothesized socio-economic differences. It was demonstrated, with reference to the large and medium sized houses, however, that Douglas fir, pine, and some variety or varieties of cottonwood were the firewoods in common use (Ibid: 48). With reference to wood fires the speculation is not convincing that "...the wealthier households were the only ones capable of heating structures with fires on a regular basis..." and that "...it may have been a symbol of wealth and status at Keatley Creek to have a house with more space per person than those of poorer households and to use routinely the strategy of using fires and furs, rather than grouped body heat, to stay warm" (Hayden et al. 1996: 157). Faunal remains suggested the existence of four domestic groups in the large pit house, possibly two groups in the medium sized house, and a single communal group in the smallest house. It was also argued in terms of the largest house that the four group clusters related to distinct pit and hearth areas were somewhat distinct from one another. On the other hand, if the largest house was also a place used for community gatherings during the winter ceremonies a greater degree of diversity in faunal remains might be expected as well as differences in the arrangement of interior features. This would be particularly so if, as historically documented, some of the winter villages were composed of a number of independent bands. The significantly larger sample of faunal remains from the largest house increased the likelihood of rare animals like the single bone examples of red fox (*Vulpes vulpes*), grizzly bear (*Ursus arctos*), and bighorn sheep (*Ovis canadensis*) being recovered. All of the marine shell, represented by dentalium (*Dentalium* sp.), purple-hinged rock scallop (*Hinnites giganteus*), and dogwinkle (*Nucella* sp.), came from the largest dwelling. While the animal and plant recoveries from the three different size pit houses do raise a number of interesting possibilities regarding insights into society it is too optimistic to suggest that "Our analyses of both plant and animal remains support the notion that Keatley Creek was occupied by residential corporate groups of differing economic and social status" (Lepofsky et al. 1996:59).

Despite the detailed analysis of cultural debris and feature distributions, assumptions bearing on wealthy pit houses relative to poor house pits are largely premised upon house size and the occurrences of certain very minor luxury items, such as nephrite, copper, dentalium shell, and bone pendants (Hayden and Spafford 1993: 125; Lopofsky et al. 1996). Stretching one's credulity is the suggestion that spall scrapers equal buckskin production equal wealth. Far more impressive evidence is presented in support of the position that the different large pit houses were occupied by different corporate groups who had access to different geographical areas of exploitation. The varieties and quantities of stone types associated with the larger pit houses suggested the following: different pit houses contained different varieties and quantities of cherts indicative of different households exploiting different land areas during the warm months; the occupants of the individual large house pits were residential groups "...which had vested rights of different resources in the landscape" (Hayden et al. 1996: 355); and these large corporate groups occupied the same house sites continuously for more than 1,000 years as indicated by the continuity of specific varieties of siliceous stone through time in the individual dwellings. This persistence in the use of specific varieties of stone is inferred to reflect continuity in economy and corporate group identity. Stone categories, determined by petrographic thin section and chemical analyses, involved five major types of siliceous stone, each with a different source. It is further hypothesized that the larger houses exercised control over the best salmon fishing spots and the most valued salmon species, used surplus dried salmon for trade to acquire power, and became involved in competitive feasting to maintain 'socio-economic' power in the community. This reconstruction of the social structure of the large Lillooet area villages appears to be a mirror image of the ethnographic accounts of the situation at The Dalles on the lower Columbia River (Jennings 1989: 182 & Fig. 4.34) and has, on occasion, an ethnographically driven just-so-story ring to it.

The presence of stone and bone war clubs in the western portion of the Canadian Plateau (Fladmark 1986: 140) and the bone fractures of the old man from the Lillooet area (Stryd 1980) would suggest conflict between villages and bands. While it has been historically documented that trade brought the Shuswap, Chilcotins, Carriers, and Kootenay into close contact, with frequent intermarriages (Teit 1909: 468), these broader social relationships may have been mainly a product of the period of European influences. Pre-European archaeological evidence of such close social contacts do not appear to be striking in the one area where archaeological evidence can be particularly informative relative to relationships between groups; the distribution of exotic lithics.

Limitations in the evidence:

There is no doubt that the enormous hydro-electric reservoirs of the Canadian Plateau have drowned much of the archaeological record. In the river valleys not flooded much destruction has resulted from earth moving activities, such a urban spread, road building, and placer mining. Vandalism of sites has also been a serious problem in some areas (Sanger 1964; Wilson 1980: 87). In the past, most excavations have focused on the pit house villages with their all too often culturally mixed archaeological deposits (Fladmark 1982: 123-124). River valley erosion has also been most destructive of the older winter villages (Richards and Rousseau 1987: 54) thus distorting the evidence relating to developments through time. Fortunately, recent research in the uplands has begun to fill in the total settlement pattern (Magne 1985; Pokotylo 1981). Are the pit house villages on the Windermere and Columbia lakes at the headwaters of the Columbia River actually Shuswap villages of the European contact period, as speculated (Borden 1956), or do these eastern villages sitting on salmon spawning grounds actually possess greater time depth? Certainly a commendable characteristic of archaeology in the Canadian Plateau has been the effort to build the culture history on a broad base of technology, settlement pattern, subsistence, and other facets of culture and environmental change and not to rely too heavily on single elements of technology such as projectile point types. The Keatley Creek site project stands as an exemplary case of the kinds of important questions that can be asked of the archaeological evidence when it is recorded and analyzed using a multi-disciplinary and multi-methodological approach.

Limitations in the published record has been a problem. An indication of the extent of unpublished archaeological evidence relevant to the Canadian Plateau is apparent in the fact that 79 or 37% of the 214 references in a recent synthesis of Plateau archaeology are represented by reports on file with the province and theses or papers presented at professional meetings (Richards and Rousseau 1987). Part of the difficulty has been the availability of publication outlets. Only Simon Fraser University has publication series that are dedicated to large substantive works in archaeology. Important contributions are occasionally published in BC Studies, a quarterly journal of the humanities and social sciences, as well as the various publications of the Royal British Columbia Museum. Unfortunately the Occasional Papers of the Heritage Conservation Branch of the Province of British Columbia appear to have been discontinued and thus there is a limited number of detailed published manuscripts stemming from the considerable amount of cultural resource management work being done in the province.

CHAPTER 28

LATE WEST COAST CULTURE

Précis:

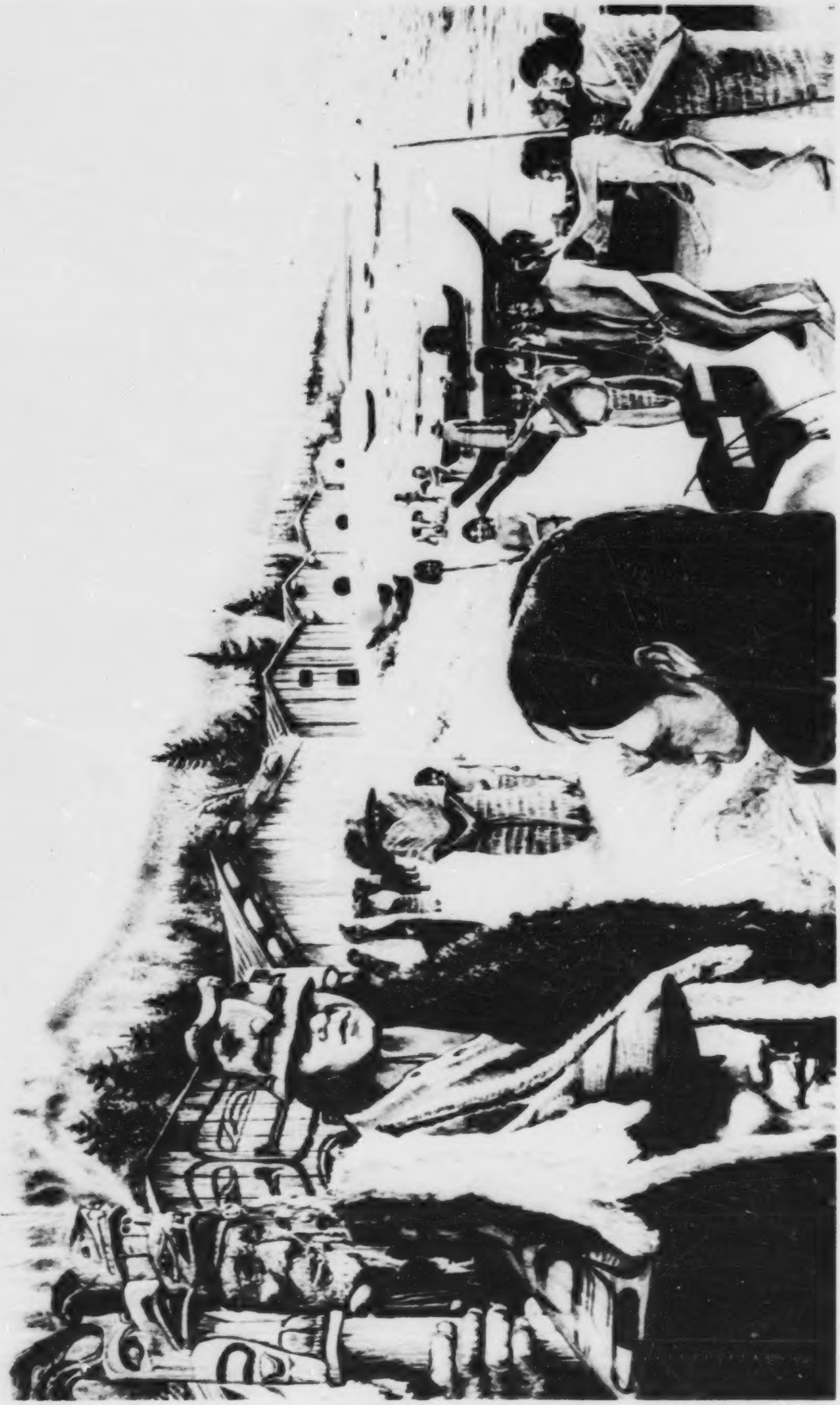
The West Coast is a relatively narrow band of coastal lands along the western face of the Coastal Mountains that includes some large islands like Vancouver, the Queen Charlotte, and the Alexander Archipelago of the Alaskan Panhandle. From the Copper River in the Gulf of Alaska to the southern Oregon coast involves 2,400 km; the total coastline, composed of numerous islands and long inlets, however, incorporates 16,000 km (Suttles 1990a: 16). There are two major coastal environmental zones, an outer coast exposed to the Pacific Ocean and an inner, sheltered coast. Climate is similar to that of western Europe with cool summers and mild, wet winters. Winds are prevailingly westerly. Tidal amplitude and times between high and low tides are complex and have a direct bearing on ease of access to intertidal foods like clams. Tidal bores and rip tides also influence water travel. On the British Columbia coast the dominant vegetation province is the Pacific Forest composed mainly of cedar-hemlock-spruce-pine-fir (McAndrews and Manville 1987). Under the dominant conifer forest cover are heaths and ferns while bogs and shoreline salt marshes are common. This forest represents a relatively homogenous ecological zone except for a tongue of conifers and Bigleaf Maples that cover the southern margins of Vancouver Island and the adjacent mainland. Europeans did not explore the coast until the end of the 18th century and significant white settlement did not take place until the mid-19th century. Thus, the time separating native life ways and the intrusion of European culture is shorter than in most parts of Canada.

Attempts to understand the development of West Coast culture initially relied upon ethnographic studies with little or no consideration of native history as reflected in the archaeological record. Given the recency of archaeological research, such an approach was understandable. Early hypotheses considered Asiatic and Oceanic influences as the major stimuli responsible for the formation of the complex societies observed by Europeans in the late 18th to early 19th centuries. Subsequent archaeologically based explanations tended to rely upon a combination of migration in conjunction with the diffusion of cultural traits and technologies. More current efforts to explain culture change have focused on the availability of certain foods due to environmental factors such as sea level fluctuations and river gradient and climatic changes (Fladmark 1975). Undoubtedly there were a number of interrelated factors which influenced the development of the complex societies of the West Coast. An understanding of these factors and how they interacted with one another, however, must be viewed through time and this perspective can only be provided by archaeology.

To acquire some appreciation of the exceptional cultural and linguistic diversity of the people of the British Columbia coast it is recommended that the reader consult Volume 7, Northwest Coast, Handbook of the North American Indians. Particularly useful introductory chapters are those by Wayne Suttles (1990; 1990a). A recent volume, which focuses on the development of social inequality and cultural complexity along the coast, also examines the Northwest Coast culture area from a number of informative perspectives (Matson and Coupland 1995). Much unpublished information, residing in theses and provincial cultural resource management reports, has been included in the latter publication. At the time of European contact "Social stratification with hereditary slavery and the importance of wealth have been identified as the most distinctive features of the culture area..." (Suttles 1990: 4). The Northwest Coast cultural pattern included "...hereditary social inequality, semi-sedentary settlement with permanent winter villages, and intensive production and storage of resources, especially salmon" (Coupland et al. 1993: 59). There is evidence to suggest that societies were still structured as egalitarian corporate groups on the northern coast at the beginning of Period IV. Near the end of this period, in this same area, there is compelling evidence that certain villages were able to exclude neighbouring villages from access to certain locally available resources. Control of food resources was an essential ingredient in the development of inequality between groups. Earlier claims for the beginnings of the Northwest Coast culture pattern, including ranked societies, have been made for the southern coast at the Pender Canal sites in the southern end of the Strait of Georgia where "... the nearly full development of Northwest Coast culture - the memorial potlatch based on direct evidence for feeding the dead, craft specialization, masks (figure 5) and ceremonialism, different labret types indicating social ranking, wood working, three-dimensional art, and a continuity of marine subsistence" are identified between 2,250 and 1,250 BC during Period III (Carlson and Hobler 1993: 45). There are speculative elements to the foregoing statement that arise from a heavy reliance upon ethnographic analogy as an interpretative tool (Carlson 1990: 115). Ethnographic analogy is a useful down-streaming method that extends the historically documented practices of native people back into pre-European times but it must be applied with considerable caution. The cultural chaos that resulted from the introduction of European disease, guns, alcohol, political machinations, and the imposition of a cash economy, not only massively altered pre-European life ways suddenly but did so prior to scholarly study of the native societies by trained ethnographers.

The development of ranked societies along the West Coast is the outstanding characteristic of Period IV and an important theoretical consideration of culture change where an archaeological contribution is essential. Social ranking on the West Coast cannot be equated with the usual European view of a hierarchical society consisting of a ruler holding sway over a number of noble families who exercised authority over many commoners who, in turn, may have been outnumbered by an even lower class of slaves. Such a pyramidal structure could actually be inverted on the West Coast with the nobles or 'worthy people' constituting more of the population than the lower ranked commoners and slaves. A survey of the ethnographic literature indicates that the nature of ranked societies along the coast was quite variable with major differences existing between the ranking systems of the northern and southern coasts. In Period IV, the historically documented Developed Northwest Coast Pattern was attained on the southern coast between 500 BC and AD 500 (Matson and Coupland 1995: 199). It is apparent that the factors leading to this pattern; concentration of dried salmon storage, shellfish harvesting, and winter villages, did not come suddenly together as a consequence of a stabilized land-sea interface beginning more than 5,000 years ago. Each of the aforementioned factors appear to have had independent histories that only coalesced when sufficient quantities of stored winter foods permitted population concentrations and consequently increasing cultural complexity. The economic impact of intensive salmon storage and concomitant social adjustments altered control of the already unevenly distributed resources and would eventually lead to social inequality. Thus social stratification followed rather than preceded intensification of the utilization and control of the salmon resource. In this sense "Economic change does alter the nature and value of the resources, and thus allows for different social arrangements to develop" (Matson and Coupland 1995: 305). Large scale salmon exploitation has a long history and is not necessarily tied to either sedentary villages or ascribed social status. It is when such food storage permitted the aggregation of large groups of people into seasonal villages shortly before the beginning of Period IV that the foundations were set in place for social changes that were, at first, gradual but were to become exponential.

There is agreement among archaeologists that it was during Period IV (1,000 BC-AD 500) that ranked societies arose along the Pacific coast from Oregon to southwestern Alaska. Associated with this development were increasing sedentism and the exploitation of the fisheries. The processes involved in the formation of a class structure composed of powerful family lineages, commoners, and slaves, with status confirmation ceremonies, such as the potlatch, have justifiably attracted considerable attention. The West Coast, however, is far from being a monolithic cultural entity. An appropriate analogy is to



COLOUR PLATE XIX: LATE WEST COAST CULTURE VILLAGE SCENE Although idealized, the artist's rendition of a village scene illustrates many of the major characteristics of Late West Coast culture. Large multi-family plank houses form a row facing the sea with shell middens being present behind and between houses. A successful raiding party has returned with prisoners as slaves, the heads of slain enemy retained as war trophies, and loot in the form of material goods. The leader of the war party is greeted by the village leaders who are in ceremonial garb. In the middle background an old woman dressed in a woven cedar bark tunic, cape, and hat watches the proceedings while in the far background two dugout canoes have bark mats thrown over them to prevent the canoes from drying out in the sun and cracking. The man in the left hand corner wears a woven spruce root potlatch hat with three rings on top indicating that the individual has validated his rights and privileges in three potlatch ceremonies. (Painting produced by Vidéanthrop Inc., Montréal, under contract with the Canadian Museum of Civilization. The painting was done by M. François Girard using sketches and technical information compiled by M. Marc Laberge and the author; the original colour version of the painting is provided on CD-ROM)

view Late West Coast culture as a fabric where the warp, the vertical elements of the fabric, represent local distinct cultural traditions while the weft, the horizontal elements of the fabric, represent the numerous traits shared by these many local traditions to form a broader cultural co-tradition or pattern. Continuity with the preceding Period III is apparent and "...between 3500 and 1500 years ago the people of the Northwest Coast, in an impressive flowering of creative achievement, had expanded and elaborated cultural themes begun many thousands of years earlier" (Fladmark 1986: 84). Within this broadly shared cultural pattern the five most striking regional variations existed along the northern, central, and southern coasts and on the Queen Charlotte Islands and the outer coast of Vancouver Island, reflecting the regional variability apparent in the preceding period. The ethnographic pattern involving an increasing focus on marine resources and particularly fish, massive wood working, heightened ceremonialism, and the increase in wealth objects cross-cut the many distinct regional cultural traditions.

While the origins of Late West Coast culture are seen to be with the Early West Coast culture of Period III, a simple linear evolution is a bit too facile. In particular, qualifications pertain to the relationship between the Lower Fraser River occupants of the Hope-Yale region and those of the Strait of Georgia (Borden 1970; Burley 1980; Mitchell 1971). Similarly, to the north, the relationship between the interior Kitselas Canyon development and what was taking place at the mouth of the Skeena River in the Prince Rupert Harbour area has elicited controversy (Allaire 1978; Coupland 1988). A partial hiatus in the archaeological record at the end of Period IV around AD 500 (Fladmark 1982: Figure 7, 111) has also caused problems in applying the direct historical approach to Late West Coast culture. This approach identifies historically documented native villages containing European trade items and then traces a sequence of related villages lacking the European goods back through pre-European time. Despite some weaknesses in the current evidence, most researchers see the regional expressions of Late West Coast culture as leading directly to the native populations that were encountered by Europeans. For example, in the Prince Rupert Harbour region of the northern coast, between 1,500 BC and AD 500, settlement patterns, economic, and social development are regarded as leading directly to the Tsimshian in the late 18th century (MacDonald and Inglis 1976).

Regional cultural complexes, either in part or in total, pertinent to Late West Coast culture of Period IV are represented by the following: on the southern coast, and specifically the Strait of Georgia, the sequential Locarno Beach and Marpole complexes; on the outer coasts of Vancouver Island and the Olympic Peninsula of adjacent Washington State, the Yuquot Zone II complex; on the central coast, Namu III and IV; on the northern coast, Prince Rupert II; and on the Queen Charlotte Islands, the Graham tradition. The Baldwin and Kleanza complexes of the lower Fraser and Skeena rivers, respectively, represent interior but still coastally related developments. Within this considerable cultural regionalism was a shared cultural pattern involving "...increased evidence of status differentiation in burials; the full development of complex and diversified fishing and sea-mammal hunting equipment generally similar to that of the ethnographic period; evidence of significant population aggregates, and the first strong indications of warfare" (Fladmark 1982: 113). New traits to appear or to acquire coast-wide distributions were toggling harpoons, labrets, bark shredders, and perforated stone sinkers. In the Strait of Georgia area on the southern coast sculpture in hard stone, ear spools, brow bands, and probably burial mounds appear for the first time. As noted, the Late West Coast culture construct represents a loose cultural fabric within which a number of regionally distinct cultures interacted to a sufficient degree to sustain a broadly shared cultural pattern. The introduction of a new element of technology, however, could have a sudden and dramatic impact upon this pattern. A discontinuity on the southern coast near the end of Period IV involving the replacement of chipped stone tools by ground bone tools appears to have been partially the result of the introduction of the bow and arrow weapon system. The bow and arrow arrived in the Strait of Georgia region from the Canadian Plateau around AD 400 (Charlton 1980: 56), an event that not only correlates with the disappearance of the spearthrower but also shortly thereafter a replacement of the vitreous basalt arrowheads of interior origin by ground bone arrowheads (Ibid: 56-57). It appears that it did not take the coastal people long to come to the conclusion that the new weapon system would work just as well without the imported stone points. As a result of this technological transfer and likely other factors the transition from the late Period IV Marpole complex to the Period V Gulf of Georgia complex appears from an archaeological perspective to have been quite rapid (Mitchell 1971a: 167).

In the Strait of Georgia the earliest ancestors of the Coast Salish are generally attributed to the Marpole complex (Mitchell 1971: 71). Cultural continuity, in part, is based upon the appearance of wealth objects and an apparent uneven distribution of said wealth objects in graves. The appearance of head deformation at this time has also been interpreted as a status marker as have labrets and ear spools. It has been speculated that wealth was converted into prestige through its redistribution by means of the potlatch ceremony. This important ceremony involved the reaffirmation of rights and privileges of people of rank. An uneven distribution of wealth objects in graves has not been noted in the preceding Locarno Beach complex, which presumably was a more egalitarian society. Differences between the Locarno Beach and Marpole complexes, however, are still ones of degree rather than kind (e.g. Carlson and Hobler 1993) and it has been observed that the way of life of the former was "...basically similar to that of the ethnographic Northwest Coast" (Matson 1981: 64). Marpole complex, with its inferred ranked burials, multi-family plank houses, evidence of large watercraft in the form of beach haul out skids at some sites, resource scheduling involving the procurement, preservation, and storage of salmon, a flourishing art tradition, complex ceremonialism, and participation in a broad trade network, is best regarded as a continuation of a lengthy process of increasing cultural complexity rather than some kind of sudden cultural fluorescence. Evidence relating to the Locarno Beach complex is more limited than that for the Marpole complex. Large communal houses were present in the region by at least 1,000 BC and, further, the frequent wooden and antler wedges of the Locarno Beach complex suggest the production of house planks. Procurement and processing of ground fish on a large scale in the Locarno Beach complex, as apparent at the Hoko River site on the Washington State side of the Straits of Juan de Fuco (Croes and Hackenberger 1988), demonstrate the capability of processing substantial winter food supplies long before the Marpole complex. In fact, this capability extends as far back as 7,000 years ago at the Namu site on the central coast (Cannon 1991).

There is merit in the proposal that cultural phases or types or complexes like Locarno Beach and Marpole actually represent economic stages of development rather than discrete cultural entities per se (Croes and Hackenberger 1988: 79). Perceived changes leading to the differentiation of such cultural constructs may simply reflect adjustments to subsistence acquisition methods resulting from over-exploitation of certain resources compounded by population growth. Certainly the ethnic integrity of a construct like Locarno Beach can be questioned. At the Hoko River site on the Olympic Peninsula the stone and bone technology clearly relate the site to the Locarno Beach complex and yet the basketry styles from the site produced distinctively different forms from the basketry styles of the contemporary Locarno Beach component of the Musqueam Northeast site in the Fraser River Delta (Borden 1976). A complex manufactured item, such as basketry, appears to be a more sensitive indicator of regional cultural development than the stone and bone artifacts; the very artifacts most commonly used to establish culture constructs. In this instance, two sites, Hoko River and Musqueam Northeast situated less than 150 km apart, shared certain elements of technology but not others, such as basketry styles, suggesting that the two sites represent separate local cultural traditions who, however, participated in a broader co-tradition. Unfortunately, relatively few sites have conditions suitable for the preservation of the wooden and bark elements of technology. Traits that do survive in archaeological deposits are often more typical of the broad co-tradition than distinctive local facets of technology. Thus, archaeology is undoubtedly receiving a warped view of the degree of technological heterogeneity in any particular region as local variability may be masked by the more preservation prone elements of an overriding technological co-tradition. A critical ramification of this proposal (Croes 1989a: 118) is that if constructs such as Locarno Beach and Marpole are economical plateaus rather than 'total' cultures, as suggested by regional basketry styles, then such archaeological constructs may be ill-suited to identify Salishan (Musqueam Northeast) from Wakashan (Hoko River) linguistic distributions. Migration would not be required to explain many linguistic distributions as different linguistic groups could have shared in the same economic plateaus most often reflected in the archaeological technological record. In other words, economic horizons represented by complexes such as Locarno Beach apparently cut across regional ethnic continuities involving totally different language families as suggested by the basketry styles and the application of the direct historical approach. The evidence that "The region wide horizontal trends seen in these economic stages or plateaus may reflect a widespread evolution and resulting shift in subsistence solutions, not "ethnic" cultural style or population shifts" (Croes 1989a: 124) can accommodate both archaeological and linguistic distributions. In a similar fashion, on the northern coast even though the Tlingit, Haida, and Tsimshian shared may ethnographic features and interacted to a considerable extent their basketry styles were quite distinct from one another. The only available archaeological wet site materials available from the region are from the Lachane site in Prince Rupert Harbour. Here basketry styles of 2,000 years ago correspond to the historically documented Tsimshian styles of the same region (Croes 1989a: 124). As the distribution of language families along the West Coast has frequently loomed large in the interpretation of West Coast archaeology (Borden 1951; Cressman 1977; Mitchell 1988) the underlying assumption of a one to one relationship between languages and archaeological cultural constructs must be critically re-assessed as well as the kinds of evidence that have been used in the past to support language migrations (see Suttles 1987: chapters 14 and 15: 256-281).

Given the significance of the cultural information provided by archaeological basketry styles, it is appropriate to repeat the fabric analogy ofWest Coast archaeological culture classification. Evidence that the weft elements of culture tend to relate to economic adaptive systems occurring over large areas while the warp elements are more local, ethnic, and conservative, means that a single archaeological cultural construct, like the Locarno Beach complex, was composed of a number of different ethnic groups. The analogy of equating warp-weft to local-broad facets of archaeological technology is by no means a novel proposal; "The fabric of Bering Strait archaeology, it appears to me, has its warp in the patterns of behaviour handed down by parents to their children in a single locality, and a weft made up of the continuous interchange of thoughts outward through space" (Giddings 1961: 157). There is little doubt, for example, that if the Northeastern Iroquois co-tradition of the Great Lakes area was not characterized by local pottery styles that, with the exception of the St. Lawrence Iroquois with their highly distinctive bone tool assemblage, the remaining archaeological material culture of arrowheads, adzes, metates/manos, scrapers, most bone implements, etc. would have been classified as a single cultural construct rather than the eight archaeological constructs that are now recognized.

In addition to the complexities involved in recognizing the interplay of a series of widely shared horizon styles with a number of regional technological expressions there is the problem of understanding the nature of the relationship of interior riverine archaeological complexes and their coastal contemporaries. For example, it has been suggested that the archaeology of the Hope-Yale region of the Lower Fraser River represents a blending of interior and coastal traits with coastal influences being represented by ground slate projectile points and knives and interior influences by pit houses and the abundant use of chipped stone tools throughout the sequence. While the suggestion that the mixture of interior and coastal traits may reflect a culturally transitional area certainly has merit (Von Krogh 1980), there is still the problem that the general lack of bone preservation in the Lower Fraser River region seriously hampers comparisons with coastal assemblages such as Locarno Beach and Marpole. Also, there are a number of parallels between the Baldwin complex of the Fraser River (1,000-350 BC) and Locarno Beach of the Strait of Georgia, such as projectile point styles, nephrite adzes, microblades, ground slate projectile points and knives, stone beads, labrets, pendants, and biomorphic sculpture. During the succeeding Skamel complex of the Lower Fraser River, however, there appears to have been a more intensive intrusion of Late Plateau culture people or influences into the Hope-Yale area (Borden 1970) followed by a further fusion of interior and coastal traits (Von Krogh 1980:222). As the deepest language cleavage between the Interior Salish languages and the Coast Salish languages is "...in the Lower Fraser Valley or Fraser Canyon" (Suttles 1987: 260) perhaps a mixed archaeological picture should be expected. Similarly, on the Lower Skeena River of the northern coast at Kitselas Canyon an initial coastal occupation followed by a permanent interior occupation with subsequent acculturation by Late West Coast culture from the Prince Rupert Harbour area has been recorded (Allaire 1978: 251), an process quite analogous to that of the Fraser River Canyon. More recent work, however, (Coupland 1988) suggests that the Kitselas Canyon sequence is basically of coastal origin. Like the situation on the Fraser River, comparisons are hampered by the general lack of bone preservation in the interior. The preceding is a caution that the boundaries between different cultures are rarely conveniently clear.

Given the diversity of foods and their uneven distribution along the West Coast, there was predictable variability within Late West Coast culture subsistence. Extremes ranged from inland hunters, seasonal salmon fishermen, and root gatherers along the lower reaches of major rivers to the outer coast sea-mammal hunters and fishermen of the Queen Charlotte Islands and the west coast of Vancouver Island. Late West Coast culture people followed a broadly based subsistence pattern that would have been supplemented by trade in various food stuffs such as eulachon oil and dried salmon. There has been an understandable tendency to emphasize the importance of salmon as the foundation of Late West Coast culture (e.g. Burley 1979: 131) as salmon was the only resource to appear in sufficient seasonal abundance to provide a critical component of the winter food supply. Salmon was the most important single food throughout the exceptional 7,000 year faunal record of the Namu site on the central coast (Cannon 1991) and yet, the so-called classic ethnographic Northwest Coast pattern did not appear in the area until much later. This ethnographic pattern would have been based upon a number of interrelated factors, cultural as well as economic. Stabilization of the coast that permitted population aggregations at key permanent resource-rich areas was likely as important as salmon in establishing the foundation for later developments. In certain areas of the coast, for example, flatfish and groundfish or eulachon exceeded salmon in importance. Plant foods, ranging from berries, tubers, rhizomes, and crabapples to sea weeds, that were so important at the time of European contact all along the coast, are for all intents and purposes absent from the archaeological record, reflecting more a problem of preservation and archaeological recovery methods than the importance of plant foods in the diet. The foregoing is not to denigrate the importance of salmon but to emphasize that the role of salmon in the winter food supply should be seen as one element, albeit an important one, in a composite of foods that included shellfish, eulachon oil, ground fish, land and sea mammals, and plants.

Regarding settlement patterns, the winter shell midden villages that first began to appear along the coast part way through the preceding Period III increase in frequency during Period IV in most regions. On the northern coast, for example, between 1,500 BC and AD 500 larger sites suggest increasing populations. The frequent occurrence of wedges, adzes, and hammers indicate the increasing importance of plank houses and dugout canoes. There is also evidence of expanded trade in the form of dentalia and obsidian. Evidence of warfare appears in the form of clubs, daggers, trophy skulls, and skeletal trauma (MacDonald and Inglis 1976: 77). Curiously, in the Strait of Georgia region the shell midden sites do not increase in size until Marpole times around 500 BC and, in this respect, contrast with the rest of the West Coast including the outer coasts of Vancouver Island and the Queen Charlotte Islands. A number of settlement features are common to shell midden sites, such as proximity to fresh water, a beach suitable for landing canoes, a sheltered location in a sound or bay, proximity to mussel and clam beds and other resources such as salmon spawning streams. There can be considerable local variation on these themes, even to the extent of shell middens occurring in caves (Haggarty 1982).

The picture of Late West Coast culture settlement patterns has been biased by the concentration of archaeological excavation on the large coastal shell midden sites. Some special purpose sites, such as pictograph/petroglyph sites, also tend to be associated with the large shell midden sites (Simonsen 1973). Small sites are known from the outer islands where specific varieties of maritime sources would be acquired as part of the seasonal round (MacDonald et al. 1987). There would also have been major seasonal camps established at resource rich locales such as salmon and/or eulachon spawning rivers. It is nearly impossible for archaeological reconnaissance methods to detect evidence of the innumerable task specific sites which undoubtedly existed within commuting range of the larger settlements. Such archaeologically invisible sites would be berry, root, and rhizome gathering sites, bark harvesting sites, and sites where plank removal from the living red cedar trees took place. Evidence of stone quarry sites are also limited and likely reflect both the decreasing importance of chipped stone in the tool kit and the widespread availability of local stone suitable for simple flake and cobble core tools.

The elaboration of art between 500 BC and AD 1 from its simple beginnings around 2,500 BC has been attributed to a long-lived and deep rooted personal guardian spirit and shamanic belief system (Carlson 1983c: 204). In the Strait of Georgia about 500 BC a number of new or elaborated mortuary traits appear such as the inclusion of abundant offerings with the deceased, particularly large numbers of shell and stone beads, cairn burial, and very likely burial mounds. Some of the cairn burials occur in cemeteries isolated from habitation sites (Smith and Fowke 1901) suggesting the existence of 'sacred places' set aside specifically for the disposal of the dead. The archaeological record from the preceding 500 years, however, is too limited to assume that these innovations were unique to the Marpole complex. Similarly, on the northern coast, graves richly provided with offerings appear in the shell middens. Much of the rock art found in proximity to the major winter villages likely pertains to Period IV but the direct dating of rock art still defies archaeological methods. Indirect methods of dating, such a the motif inscriptions on small stone objects from radiocarbon dated components, suggest considerable time depth for the practice (Lundy 1983). Between 1,000 BC and AD 500 the incidence of modified human bone, particularly skull parts, on the northern coast suggest shamanistic practices and possibly the initial development of historically documented cannibal societies (Cybulski 1978).

The observation that "The prehistory of the Far West differs from that of the rest of the North American continent because it developed on its own terms" (Cressman 1977: 208) is only partially valid. A distinctive cultural pattern did emerge but it was certainly not immune to external influences. On the southern coast the bow and arrow technology was introduced from Late Plateau culture towards the end of Period IV. From the same region cosmological concepts expressed in the form of the soapstone seated human bowl statues, often with depictions of rattlesnakes and toads/frogs, also reached the coast. Major geological sources of both the jade-like nephrite and soapstone occur between Lillooet and Yale in the interior and represented important trade items with the coastal people. Nephrite adzes appear to have been particularly valued. Labrets that were inserted through a hole or holes cut in the cheek or lip are found along the entire coast with the earliest evidence of their use coming from the Queen Charlotte Islands some 4,500 years ago (Severs 1974). Whether labrets originated in the north and diffused south along the coast or visa versa is uncertain. Certainly labret styles suggest a relationship between the British Columbia coast and adjacent southern Alaska in the Pacific Eskimo region (Clark 1984). If there is a direct relationship between the slate grinding technologies of the Alaskan and British Columbian coasts then it would reinforce the likelihood that influences flowed from north to south as this technique for fashioning stone appeared around 2,500 BC in the north. It has been speculated that ear spools, the toggling harpoon, stone sculpture, and burial mounds, are all traits introduced to the West Coast from elsewhere in North America (Fladmark 1986). While it is possible that stimulus diffusion was involved, the toggling harpoon style of the north is distinctively different from the composite toggling harpoon of the West Coast. Independent invention on the British Columbia coast of some of the foregoing traits cannot be ruled out at this point.

Evidence pertaining to human biology increases markedly during Period IV. Period IV people, like their historically documented descendants, were of "...medium stature, short and broad trunks, long and powerfully developed arms, and less strongly developed lower limbs" (Cybulski 1990: 53). Research indicates that while there is evidence for local breeding populations along the coast these populations were not closed systems and, therefore, there is neither genetic uniformity nor discrete genetic boundaries.

Identified diseases include congenital and venereal syphilis, criba orbitalia related to iron deficiency anaemia, low occurrence of cavities but high incidences of abscesses, arthritis, the joint disease ankylosing spondylitis, and trauma. Of particular interest is the latter where bone fractures were likely the result of warfare on both the northern and central coasts. Evidence of trauma consists of facial, head, limb, and spinal fractures suggestive of club and club-blow parrying wounds. Trophy skulls and decapitated bodies are also most reasonably interpreted as the products of warfare. Artificial cranial deformation appears on the southern coast around 500 BC but did not spread to the northern coast. This feature was historically associated with ascribed status and its high incidence (Cybulski 1975) may relate to an inverted ranking system whereby 'worthy' people were more numerous than those classified as either 'worthless' or 'slaves' (Suttles 1987: Figure 1). As cranial deformation must be initiated by binding the head of an infant, the trait clearly is related to some form of hereditary statement of status.

The development of social inequality in the form of ranked societies during Period IV has been a major theoretical concern of West Coast archaeologists. Proposals relating to the development of status inequalities have largely been based upon such considerations as the growing importance of wealth objects like obsidian, marine shell beads and pendants, nephrite adzes, and native copper, the uneven occurrence of grave offerings in cemeteries with some infants being richly provided suggesting wealthy lineages and families, head deformation on the southern coast as well as burial mounds, and the association of sophisticated art with the preceding assumed indicators of status. There is also the suggestion of the beginnings of the potlatch as a ritual means of enhancing and reinforcing rights and privileges (MacDonald and Inglis 1976: 70). A tendency to overemphasize the importance of some traits relative to their economic and social significance can be noted, such as the association of thin ground slate knives with the scoring of salmon fillets for the storage of 'food wealth' required to support an upper class (Burley 1980). Processes leading to the ranked societies of the West Coast are best regarded as an accretionary development pushed by population pressures and concomitant cultural adjustments (Croes and Hackenberger 1988). Most compelling of the evidence of social inequality is the discovery that all villages in one locale did not have equal access to all of the local resources indicating control over certain resource areas by some villages to the exclusion of others (Coupland et al. 1993). It is no longer just a matter of inequalities between individuals and families in a single community but inequalities that effected entire communities. Attempting to specifically pin-point when these processes of social change from egalitarian or 'non-ranked' societies into ranked societies took place is likely a fruitless exercise. Some of the so-called status indicators, such the abundance and nature of grave offerings and the acquisition of exotic items, can be just a readily explained by cultural and other factors unrelated to wealth acquisition for status and prestige. For example, there is no archaeological record of perishable grave offerings and, therefore, their role in mortuary procedures and their potential relevance to rank cannot be evaluated. Head deformation is a much better indicator of ascribed status. The technological, demographic, economic, and social processes which transformed egalitarian societies into ranked societies were undoubtedly complex, requiring time and evolving organization to acquire a necessary degree of social acceptance. While the first faint glimpses of this process begin to appear archaeologically by 1,000 BC, it is likely that undetectable social processes were already underway much earlier. Certainly it was during Period IV that ranked societies of various forms were in place along the entire coast. As is apparent from European documentation, however, the nature of this social ranking was quite variable with the most striking differences existing between the northern and southern coasts.

Cultural origins and descendants:

There is agreement that the ancestor of Late West Coast culture was Early West Coast culture of Period III and that, with few qualifications, the various regional cultural complexes of the northern, central, and southern coasts, the western coast ofVancouver Island, and the Queen Charlotte Islands, led directly to the various native people encountered in these regions by Europeans in the late 18th and early 19th centuries (Fladmark 1982: 120). Period IV represents a 1,500 year slice of time within which developments already in place during Period III were elaborated upon. The most important single development during this period was the appearance along the entire coast of societies within which social inequalities existed.

Despite the general acceptance of cultural continuity from Period III to Period IV, the relationship between the Locarno Beach and the Marpole complexes of the Strait of Georgia on the southern coast requires some discussion. An early proposal suggested that the Marpole complex was possibly the product of a population movement from the Fraser River Canyon to the coast where some form of fusion took place between the Lower Fraser and Fraser Delta people (Borden 1951: 48; 1970: 109).A migration to the coast from the Lower Fraser River to account for the Marpole complex has recently been revived. In a modified version of the original hypothesis, people from the Fraser Canyon area moved to the coast and, with their advanced winter food processing methods, influenced subsequent cultural developments including those leading to social complexity (Burley 1979: 140; Calvert 1970: 74). This migration has also been used to account for the displacement of an earlier proto-Penutian-speaking population (Locarno Beach complex) by interior Salish-speakers. The last speculation is related to a hypothesis that attempts to explain language family distributions by proposing the existence of a widespread Penutian-speaking occupation on the coast that was subsequently truncated by the intrusion of Salish and Wakashan-speaking populations (Burley and Beattie 1987: 205). It is recognized, however, that the evidence is insufficient to demonstrate either Locarno Beach/Marpole discontinuity or continuity (Burley 1980: 37). In contrast to the foregoing scenario, at the Pender Canal sites in the southern Strait of Georgia cultural continuity is seen to extend from Period III to Period IV and include both the Locarno Beach and Marpole complexes (Carlson and Hobler 1993: 44-45). Unlike its origins, there is a consensus that the Marpole complex developed directly into the Gulf of Georgia complex of Period V (Burley 1980: 38) to eventually become the Coast Salish people (Carlson 1960: 585; Charlton 1980: 57; Fladmark 1986; McMillan and Claire 1982: 123; Mitchell 1971). On the basis of a number of continuities in technology and other aspects of culture in the Locarno Beach and Marpole complexes, most archaeologists have opted for an in place development of Marpole out of Locarno Beach (e.g. Abbott 1972: 277; Charlton 1980: 57; Croes and Hackenberger 1988: 78; Matson 1983: 143; Matson and Coupland 1995: 215-216; Mitchell 1969; Murray 1982). Continuity between the two complexes is suggested by the following: basketry styles from the Musqueam Northeast site Locarno Beach complex occupation are related to ethnographic Coast Salish styles (Borden 1976); shared art motifs such as stylized whale tails on knives and clubs (McMillan and Nelson 1989); contracting stemmed and large leaf-shaped chipped projectile points, microblades, facetted ground slate points, labrets, ear spools, grooved or notched net sinkers (Mitchell 1971: 68-69); similar subsistence and settlement patterns; shared manufacturing processes of chipping, pecking, grinding, sawing, and grinding of stone and bone, and shaping bone and antler with adzes (Charlton 1980: 57). Many of these traits continue into the Gulf of Georgia complex of Period V along with the Marpole complex traits of small triangular chipped projectile points, nipple top polished stone hand mauls, copper objects, and dentalia (Mitchell 1971). Cluster and multidimensional scaling analyses, using both presence and absence of trait attributes along with frequency data (Matson 1974; Monks 1982), revealed a lineal relationship extending from Locarno Beach to Marpole to Gulf of Georgia with some overlapping of the first two and a relatively sharp break at the Gulf of Georgia complex. The latter supports the suggestion that the transition out of Marpole was likely rapid (Mitchell 1971a: 167). Anteroposterior artificial head deformation in the Marpole and Gulf of Georgia complexes and the 19th century Coast Salish, however, represents clear evidence of cultural continuity (Cybulski 1975: 43). Human biology evidence is too limited to determine if the Locarno Beach people differed biologically to any degree from the Marpole people. A major weakness in the hypothesis that Marpole people from the Lower Fraser River either replaced or merged with Fraser Delta Locarno Beach people is the requirement for the two complexes to be contemporary. Stratigraphy consistently indicates that the Locarno Beach deposits occur underneath the Marpole deposits. Arguments for the contemporaneity of the two complexes is only supported by some radiocarbon dates (Burley 1980: 37), a method that is simply too imprecise.

While there was some change from the generalized economy of Locarno Beach to the more specialized salmon-focused economic base of Marpole, this change could have been realized through diffusion of technology in conjunction with need instead of population migration (Abbott 1986: 190). Pertinent to the discussion is the fact that much of the commonly preserved archaeological artifacts from complexes like Locarno Beach and Marpole pertains to economic activities like hunting and fishing, which cross-cut more local technological traditions such as basketry (Croes 1989: 199). An outstanding example of this is the Locarno Beach Salish style basketry from the Musqueam Northeast site in the Fraser River Delta and the Locarno Beach Wakashan style basketry from the Hoko River site on the Olympic Peninsula of adjacent Washington State (Croes and Hackenberger 1988). This evidence is critical to the interpretation of West Coast culture history as earlier ethnographically based explanations to account for the distribution of the seven linguistic families along the British Columbia coast still exert a strong influence on archaeological thinking. Some of these linguistic families, like Salish and Wakashan, are made up of numerous mutually unintelligible languages. From a linguistic perspective "It is possible that all of the presently unrelatable language families in the northwest go back to one or a few languages brought into the area so long ago that linguistic change has obliterated all evidence of common origin" (Kinkade et al. 1987: Plate 66). Further, the fact that the shared general characteristics of phonology, grammar, and semantics of these 'unrelated' languages makes them distinct from the languages of the rest of North America suggests the "...languages had been in contact over a long period of time" (Ibid: Plate 66). A hypothesized displacement of some Salish speakers to the coast by Eyak-Athapascan speakers pushing south through the interior of the Canadian Plateau (Borden 1950: 245) has been particularly persistent despite the weak nature of the evidence (Suttles 1987: 256-264). Recently it has been speculated that the appearance of the Queen Charlotte Strait culture type (500 BC-AD 300) at the north end of Vancouver Island and the adjacent mainland resulted from a Wakashan-speaking population replacement of the indigenous Salish-speaking Obsidian culture type (3,000-500 BC) where "Sometime between 500 B.C. and A.D. 300, Wakashan languages, culture, and, most likely, populations expanded from the northern part of the west coast (and possibly as well from the western islands of the north central coast) at the expense of resident Salishan languages, culture, and likely, populations" (Mitchell 1988: 284-285; see also Mitchell 1990:357-358). With the evidence that artifact horizon styles related to subsistence activities can cross-cut local technological traditions such as basketry (Croes and Hackenberger 1988) it is possible to envision all of the unrelated linguistic families along the West Coast, with their many mutually unintelligible languages, sharing certain elements of technology and other facets of culture while retaining their languages and other local traditions including certain elements of technology. Thus population replacements are not necessary to explain certain archaeological 'cultural' distributions relative to the distributions of linguistic families.

On the northern coast, the 3,000 years involved in "All three horizons of the Prince Rupert middens then represent continuous Tsimshian development" (MacDonald 1969: 243). Such cultural continuity is supported by the basketry styles from the 2,000 year old 'wet' deposits of the Lachane site which are comparable to ethnographic Tsimshian basketry styles (Croes 1989a). Similarly, at the Grant Anchorage site 3,500 years of continuity to the time of European contact is proposed (Simonsen 1973: 74). On the Skeena River in the Kitselas Canyon continuity is seen to exist between the Paul Mason and Kleanza phases spanning 1,200 BC to AD 500 (Coupland 1988; Matson and Coupland 1995: 237, Table 7-14) although contrary opinion exists (Allaire 1978; 1979). To the west, on the Queen Charlotte Islands, there are two opinions concerning cultural continuity with Fladmark seeing a Transitional complex being contemporary with the Graham tradition while Sutherland sees a continuous development of the Graham tradition from 2,200 BC to the historically documented Haida (Fladmark et al. 1990). By 1,000 BC closer relationships appear to develop between the Queen Charlotte Islands and the Prince Rupert Harbour region. This has been attributed to the spread of western red cedar (*Thuja plicata*) to the Queen Charlotte Islands (Hebda and Mathewes 1984) which permitted the manufacture of large sea-worthy dugouts and increasing deep water sea mammal exploitation (Fladmark et al. 1990).

As with the northern and southern coasts, cultural continuity spanning thousands of years is attributed to the central coast (Hobler 1990) as well as regions such as the outer coast of Vancouver Island (Dewhirst 1980). At the time of European contact portions of the central coast were occupied by Tsimshian-, Wakashan-, and Salishan-speakers which, in conjunction with the evidence of archaeological continuity of more than 5,000 years, raises additional questions regarding any one-to-one association between archaeological cultural constructs and specific linguistic families. As outlined in the **Précis**, a useful way to view Late West Coast culture history is through the analogy of a fabric where the vertical element warps represent the numerous local cultural traditions and the horizontal element wefts represent the shared traits of a coast-wide technological horizon that acts as the glue holding the broad co-tradition together. Such a perspective recognizes the regional cultural heterogeneity of Late West Coast culture while accommodating the horizon characteristics that pertain to the far flung interactions between all of the regional traditions. To appreciate cultural development along the coast it is necessary to superimpose two classificatory systems over one another; namely a vertical, local dimension and a broad, coast wide horizontal dimension with each being composed of different cultural traits. Despite the challenges involved in attempting to isolate regional traits from broad horizon style traits a similar classificatory approach could profitably be applied to all areas of Canada and elsewhere.

The considerable number of radiocarbon dates pertinent to Late West Coast culture span Period IV (1,000 BC-AD 500) but are regionally uneven in their distribution and frequency. To arrive at calendar dates, either BC/AD or 'years ago', radiocarbon dates have all been calibrated following a particular set of calibration tables (Klien et al. 1982). All dates based upon shell have been excluded given the capability of molluscs to incorporate old carbonates and thus give older dates than the archaeological target intended for dating. Readers interested in individual radiocarbon dates, substances dated, whether AMS or beta dates are involved, archaeological associations, laboratory number, statistical range of date, and other information are advised to consult the following references relative to region: Strait of Georgia on the southern coast (Burley 1980; Carlson and Hobler 1993: Tables 1 & 2; McMillan and Claire 1982; McMillan and Nelson 1989; Mitchell 1971; Wilmeth 1978); Lower Fraser River, southern coast, (Eldridge 1981; Mitchell 1971; Von Krogh 1976; Wilmeth 1978); outer coast of Vancouver Island, (Dewhirst 1980; Haggarty 1982; Haggarty and Boehm 1974); central coast, Cannon 1991; Carlson n.d.; Chapman 1982; Luebbers 1978); northern coast, (Inglis 1976; Wilmeth 1978); and the Queen Charlotte Islands, (Severs 1974; Wilmeth 1978). Dates from both the outer coast of Vancouver Island and the Queen Charlotte Islands tend to fall into a range of 500 BC to AD 500. Most of the dates from the central coast come from the exceptional Namu site that was occupied throughout the entire time span of human occupation on the coast. The foregoing references are far from being complete or even current but they should provide the reader with a sufficient impression of the radiocarbon chronology along the West Coast during Period IV.

Technology:

Even though considerable regional variability in technology exists in Late West Coast culture sufficient shared horizon styles and other elements of culture knit the regional traditions together to form what is treated here as a single cultural construct. A more regional approach would certainly identify a number of local cultures but the present scheme best fits the purposes of these volumes. On the basis of technology and other elements of culture, the West Coast of British Columbia can be divided into five major regions. Each region has its own distinctive characteristics. Specifically the regions are as follows: (1) the southern coast including regional facies in the Strait of Georgia and the Lower Fraser River Valley; (2) the outer coast of Vancouver Island; (3) the central coast; (4) the northern coast, including the mainland coast and the lower Skeena River; and (5) the Queen Charlotte Islands.

In order to provide an impression of the considerable variability in technology that is being subsumed under the rubric 'Late West Coast culture' sites from some of the above regions are compared on Table 20. Sites were selected on the basis of their archaeological contexts relative to Period IV, sample sizes, completeness of artifact descriptions, amenability of the different artifact classifications to reinterpretation, and availability in the published literature. The sites are the 500 BC Marpole complex occupation of the Glenrose Cannery shell midden in the Fraser River Delta (Matson 1976), the 1,000 BC DiRi-14 component 2 in the Hope area of the Lower Fraser River (Eldridge 1981), the 2,000 year old Zone II of the Yuquot site on the outer coast of Vancouver Island (Dewhirst 1980), the 800 BC component II of the O'Connor shell midden site on the central coast (Chapman 1982), and the 1,000 BC Component I of the Paul Mason site in the Kitselas Canyon of the Skeena River of the northern coast (Coupland 1988). Both the Fraser River and Skeena River canyon sites had poor bone preservation and lacked bone tools but are included to provide a comparison of southern and northern coast riverine fishing stations. The Paul Mason site was considered in Volume I but as the latest component dates to 1,000 BC it is also appropriate here for comparative purposes. Regrettably, incomplete publication did not permit the inclusion of major shell midden sites from Prince Rupert Harbour on the northern coast and the Namu site on the central coast.

Table 21 provides a comparison of the Locarno Beach and Marpole levels of the Montague Harbour site off the southeast coast ofVancouver Island (Mitchell 1971), the Marpole components of the Whalen Farm site (Seymour 1976) in the Fraser River Delta and the False Narrows site outside of Nanaimo on the southeast coast of Vancouver Island across the Strait of Georgia from Vancouver (Burley 1988: Table 3). The purpose ofTable 21 is to examine the degree of technological continuity or discontinuity between the Locarno Beach and Marpole complexes as well as to assess the extent of technological variability within the Marpole complex. Some reclassification and exclusions of certain minor categories listed in the original published works has been necessary in order to achieve the comparisons provided in the following tables. Minor errors resulting from the translation of a number of different tool classification approaches into equivalent categories for comparative purposes are a possibility. The effects of grave offerings being included with the habitation assemblage from the False Narrows site has been partially reduced by excluding the numerous shell beads.A central purpose of the tables is to provide an impression of the nature of the tool kits of Late West Coast culture relative to both region and time.

Before proceeding, there are two qualifications that must be made with reference to the archaeological record on technology. First, it is known from ethnographic observations that the material culture of the West Coast was dominated by products manufactured from wood and plant fibres which, except under special circumstances, do not survive the passage of time. Second, the sudden appearance of a well-developed

Category	**Glenrose**		**DiRi - 14**		**Yuquot**		**O'Connor**		**P. Mason**	
	f	%	f	%	f	%	f	%	f	%
Projectile points	14	7.5	16	3.8	-	-	-	-	-	-
Biface knives	12	6.4	4	1.0	-	-	-	-	10	2.3
Abraders	24	12.8	1	0.2	548	56.8	19	12.3	55	12.6
Flake scrapers	23	12.2	148	35.3	-	-	-	-	2	0.5
Cobble tools	3	1.6	64	15.3	3	0.3	-	-	165	37.8
Cobble spall tools	6	3.2	34	8.1	-	-	-	-	36	8.2
Flake knives	1	0.5	3	0.7	-	-	-	-	47	10.8
Ground stone knives	22	11.7	53	12.6	-	-	-	-	-	-
Ground stone points	8	4.3	-	-	-	-	1	0.7	10	2.3
Microblades	4	2.1	28	6.7	-	-	-	-	25	5.7
Stone wedges	2	1.1	18	4.3	-	-	-	-	10	2.3
Celts	2	1.1	5	1.2	9	0.9	2	1.3	3	0.7
Hammerstones	3	1.6	24	5.7	-	-	-	-	41	9.4
Spokeshaves	2	1.1	3	0.7	-	-	-	-	-	-
Naturally perforated sinker	-	-	-	-	11	1.1	-	-	-	-
Saws	-	-	-	-	P*	-	-	-	7	1.6
Ochre nodules	-	-	6	1.4	-	-	-	-	-	-
Slate beads	31	16.5	-	-	-	-	-	-	?	-
Anvil stone	1	0.5	-	-	-	-	-	-	-	-
Gravers	1	0.5	3	0.7	-	-	-	-	-	-
Drills	1	0.5	1	0.2	-	-	-	-	-	-
Uniface knives	-	-	2	0.5	-	-	-	-	-	-
Edge ground cobbles	-	-	3	0.7	-	-	-	-	-	-
Spearthrower weight	-	-	1	0.2	-	-	-	-	-	-
Ground basalt flakes	-	-	2	0.5	-	-	-	-	-	-
Metate	1	0.5	-	-	-	-	-	-	-	-
Denticulate	2	1.1	-	-	-	-	-	-	-	-
Ornamental stone	-	-	-	-	-	-	-	-	7	1.6
Ground stone pencils	-	-	-	-	-	-	-	-	13	3.0
Ground stone drills	-	-	-	-	-	-	-	-	2	0.5
Grinding stones	-	-	-	-	-	-	-	-	4	0.9
Bone and antler implements										
Bone awls	12	6.4	-	-	48	5.0	9	5.8	-	-
Bone points	1	0.5	-	-	8	0.8	27	17.4	-	-
Gorges & barbs	2	1.1	-	-	89	9.2	89	57.4	-	-
Wedges	3	1.6	-	-	2	0.2	-	-	-	-
Canine pendants	2	1.1	-	-	17	1.8	-	-	-	-
Incisor tools	1	0.5	-	-	4	0.4	3	1.9	-	-
Ulna tools	-	-	-	-	13	1.4	1	0.7	-	-
Bilaterally barbed harpoons	1	0.5	-	-	3	0.3	-	-	-	-
Unilaterally barbed harpoons	-	-	-	-	4	0.4	-	-	-	-
Needle	1	0.5	-	-	16	1.7	-	-	-	-
Flesher	1	0.5	-	-	-	-	-	-	-	-
Ring	1	0.5	-	-	-	-	-	-	-	-
Adze	-	-	-	-	1	0.1	-	-	-	-
Dogfish awls	-	-	-	-	29	3.0	-	-	-	-
Shuttles	-	-	-	-	9	0.9	-	-	-	-
Bark shredders	-	-	-	-	2	0.2	-	-	-	-

Category	Glenrose		DiRi - 14		Yuquot		O'Connor		P. Mason	
	f	%	f	%	f	%	f	%	f	%
Net gauges	-	-	-	-	6	0.6	-	-	-	-
Knife	-	-	-	-	1	0.1	-	-	-	-
Fishhook shanks	-	-	-	-	2	0.2	-	-	-	-
Harpoon foreshaft	-	-	-	-	4	0.4	-	-	-	-
Composite harpoon parts	-	-	-	-	102	10.5	-	-	-	-
Leister parts	-	-	-	-	10	1.0	-	-	-	-
Toggle	-	-	-	-	1	0.1	-	-	-	-
Rake tine	-	-	-	-	1	0.1	-	-	-	-
Perforated phalanges	-	-	-	-	6	0.6	-	-	-	-
Perforated astragali	-	-	-	-	2	0.2	-	-	-	-
Pendants	-	-	-	-	3	0.3	-	-	-	-
Beads	-	-	-	-	6	0.6	-	-	-	-
Clubs	-	-	-	-	3	0.3	-	-	-	-
Whistles	-	-	-	-	2	0.2	-	-	-	-
Mussel shell tools	-	-	-	-	-	-	4	2.6	-	-
Totals	**188**	**100.0**	**419**	**99.8**	**965**	**99.7**	**155**	**100.1**	**437**	**100.2**

TABLE 20: COMPARISON OF THE TOOL KITS OF FIVE LATE WEST COAST CULTURE SITES Glenrose pertains only to the Marpole complex at the Glenrose Cannery site in the Fraser River Delta, DiRi-14 is a Lower Fraser River site in the Hope area, Yuquot refers to Zone II of the Yuquot site on the outer coast of Vancouver Island, the O'Connor site is on the central coast, and P. Mason refers to Component I of the Paul Mason site in the Kitselas Canyon of the Skeena River. The Table is intended to provide an impression of the regional variability that exists in Late West Coast culture tool kits. Note: Due to preservation conditions there were no bone tools at DiRi-14 or Paul Mason and antler is not differentiated from bone.

bone and antler industry in association with the shell midden sites suggests that the technology likely existed before 6,000 years ago but did not survive in the archaeological record until the acid soil neutralizing shell middens were in place.

The artifact category frequencies on Tables 20 and 21 are a clear indication of why West Coast archaeologists have relied heavily upon artifact category presence or absence rather than the quantitative occurrence of traits. For example, on Table 20 abraders were recovered from all of the comparative units but in frequencies ranging from 1 at the DiRi-14 site (0.2) to 548 (57%) at the Yuquot site. Curiously, at the Shoemaker I site at Alberni on Vancouver Island (McMillan and Claire 1982), with its close artifact similarities to contemporary Strait of Georgia sites, 57% or 578 of the 1,008 artifacts were abraders suggesting a blending of the distinctive tool kits of the outer and inner

Category	**Montague I**		**Montague II**		**Whalen F.**		**False Narrows**	
	f	%	f	%	f	%	f	%
Chipped projectile points	17	6.5	10	9.7	3	2.9	24	4.7
Point preform	-	-	-	-	-	-	1	0.8
Ground stone points	11	4.2	2	2.0	1	1.0	21	4.1
Ground stone knives	1	0.4	-	-	-	-	28	5.5
Chitho-like knives	29	11.2	3	3.0	-	-	-	-
Biface knives	6	2.3	-	-	5	4.9	30	5.9
Cobble spall tools	13	5.0	1	1.0	2	2.0	1	0.2
Drill	1	0.4	-	-	-	-	-	-
Flake scrapers	1	0.4	-	-	16	15.7	23	4.5
Gravers	-	-	-	-	-	-	3	0.6
Microblades	2	0.8	3	3.0	-	-	5	1.0
Wedges	-	-	-	-	-	-	7	1.4
Cobble tools	8	3.1	-	-	-	-	5	1.0
Celts	2	0.8	1	1.0	1	1.0	10	2.0
Slate awl	1	0.4	-	-	-	-	-	-
Gulf Island complex*	12	4.6	-	-	-	-	-	-
Bead	1	0.4	-	-	-	-	8	1.6
Labret	1	0.4	-	-	-	-	-	-
Ear spool	1	0.4	-	-	-	-	-	-
Pendants	2	0.8	-	-	-	-	4	0.8
Hammerstones	7	2.7	5	4.9	2	2.0	2	0.4
Perforated stones	-	-	2	2.0	-	-	11	2.2
Net sinkers	8	3.1	6	5.8	-	-	-	-
Cobble mortar	1	0.4	-	-	-	-	-	-
Pestles	5	1.9	1	1.0	-	-	-	-
Saws	2	0.8	4	3.9	-	-	2	0.4
Abraders	56	21.5	25	24.3	12	11.8	66	13.0
Red Ochre	5	1.9	-	-	-	-	-	-
Stone bowl	-	-	-	-	1	1.0	2	0.4
Mauls	-	-	-	-	1	1.0	5	1.0
Carved effigies	-	-	-	-	-	-	5	1.0
Lignite pendant	-	-	-	-	1	1.0	-	-
Worked siltstone	-	-	-	-	8	7.8	-	-
Bone and antler implements								
Projectile points	2	0.8	3	3.0	8	7.8	57	11.2
Needle	-	-	2	2.0	1	1.0	13	2.6
Awls	10	3.8	7	6.8	5	4.9	65	12.8
Fish spine awls	-	-	-	-	22	21.6	-	-
Perforated bird claw	-	-	-	-	1	1.0	-	-
Gorges/barbs	7	2.7	6	5.8	-	-	-	-
Ulna tools	3	1.2	4	3.9	-	-	P**	P**
Knife	1	0.4	-	-	-	-	-	-
Wedges	16	6.2	9	8.7	8	7.8	14	2.8
Miscellaneous items	5	1.9	3	3.0	-	-	13	2.6
Composite toggling harpoons	2	0.8	-	-	1	1.0	3	0.6
Unilaterally barbed harpoons	-	-	-	-	-	-	4	0.8
Foreshafts	9	3.5	-	-	-	-	-	-
Composite flakers	8	3.1	-	-	-	-	-	-
Spatula	-	-	-	-	1	1.0	-	-

Category	**Montague I**		**Montague II**		**Whalen F.**		**False Narrows**	
	f	%	f	%	f	%	f	%
Beads	-	-	-	-	2	2.0	11	2.2
Chisels	-	-	-	-	-	-	7	1.4
Fishhook shanks	-	-	-	-	-	-	4	0.8
Pendants	-	-	-	-	-	-	11	2.2
Shell and copper implements								
Dentalia	-	-	2	2.0	-	-	P***	P***
Mussel shell tools	4	1.5	4	3.9	-	-	7	1.4
Scallop shell rattles	-	-	-	-	-	-	26	5.1
Shell pendants	-	-	-	-	-	-	4	0.8
Shell gorget	-	-	-	-	-	-	1	0.2
Copper artifacts	-	-	-	-	-	-	2	0.4
Totals	**260**	**100.3**	**103**	**100.7**	**102**	**100.2**	**505**	**100.4**

TABLE 21: TOOL KIT FREQUENCIES FROM THE LOCARNO BEACH AND MARPOLE COMPLEXES OF THE MONTAGUE HARBOUR SITE AND THE MARPOLE OCCUPATIONS OF THE WHALEN FARM SITE AND LEVELS I AND II OF THE FALSE NARROWS SITE Note: * The Gulf Island complex refers to an assemblage of small enigmatic objects usually carved from stone (Borden 1983) and frequently referred to as 'whatzits'; P** indicates that the single ulna awl from the False Narrows site was included under 'awls'; and P*** indicates that the 9,675 shell disc, toredo, and dentalia shell beads from the False Narrows site, mainly associated with burials, were excluded from the Table.

coasts. The high representation of composite harpoon parts at the same site (63 or 6.3%) adds further support to the foregoing observation. Celts are found on all the Table 20 sites but in consistently low frequencies. High frequencies of cobble and cobble spall tools at the two riverine site suggests that such expedient implements were used to gut and fillet salmon preparatory to the drying process. Some of these 'cobble tools' could also simply represent the natural cobble cores from which the cutting spalls were originally struck rather than being tools in their own right. Bone tools such as awls, projectile points, gorges, barbs for composite fishhooks, and incisor knives/chisels, are represented on all sites with bone preservation. There were much higher frequencies of bone projectile points, gorges, and barbs on the central coast O'Connor site. With reference to sites in this area, however, it was observed "...that in spite of the overall similarities in assemblages, the frequency with which specific artifact forms are encountered at any one site, varies according to the resource or resources being exploited" (Chapman 1982: 130). Of particular interest are the low and generally erratic frequencies of 'diagnostic' artifact categories such as chipped and ground slate projectile points, ground slate knives, microblades, antler wedges, ulna tools, bilaterally and unilaterally barbed harpoons, needles, and adzes and knives manufactured of mussel shell. An aspect of regional technology in Late West Coast culture that is clear from Table 20 is the far greater incidence and variety of bone tools at the Yuquot site on the west coast of Vancouver Island.

Table 21 attempts to assess the relationship of the Locarno Beach complex Montague Harbour I site tool kit to that of the Marpole complex occupation (II) of the same site and also to compare the Montague Harbour Marpole tool kit with that of the Whalen Farm site in the Fraser River Delta and the False Narrows site on the southeast coast of Vancouver Island. The Locarno Beach and Marpole tool kits at the Montague Harbour site not only share numerous artifact categories but also similar frequencies of tool categories (Mitchell 1990: Figures 2 & 3). This is reflected in a Robinson and Brainerd Coefficient of Similarity of 124 for the two occupations (Brainerd 1951). The coefficient adds some support to the opinion of researchers who regard the Marpole complex as an in place development out of the preceding Locarno Beach complex rather than being the product of a migrant population to the Strait of Georgia. In contrast, there was a low Coefficient of Similarity of 60 for the two Marpole complex Whalen Farm and Montague Harbour II comparative units and 100 for the Montague Harbour II and False Narrows sites. Such tool kit variability within the Marpole complex may be a product of site sample size, site function, or tool kit variability within a Marpole complex composed of a number of local technological traditions. The latter factor is considered to be most responsible for regional variability. Similarly, metric multidimensional scaling suggests that Locarno Beach mainland sites differ significantly from Locarno Beach island sites (Matson and Coupland 1995). Although Table 6-2 in Matson and Coupland (1995) used the same data from the Montague Harbour site, Level I, as in Table 21 of this chapter, there are some discrepancies between the two tables. The differences relate to sample sizes, fragments apparently being excluded from the former table, and the use of different classificatory terms. Neither of these differences seriously compromises either table. With reference to the foregoing Coefficients of Similarity figures identical comparative units would have a coefficient of 200 while completely different comparative units would have a coefficient of 0. For a more detailed explanation of this mathematical measurement of relationship between any two set of comparable data see Volume I (Wright 1995: Figure 38). As was the case with the coast wide comparison, the so-called diagnostic artifacts in the Marpole complex are rare occurrences relative to total assemblages.

To judge from the preceding tables any definition of Late West Coast culture should be based upon a combination of associated cultural systems and not upon technology alone. Cultural systems such as settlement patterns, subsistence, and cosmology, used in conjunction with certain elements of technology such as art styles, provide an overview of Late West Coast culture. Whether art styles should be viewed as an element of technology or cosmology or both is a mute point.

As has been emphasized, what is being called Late West Coast culture is actually a large number of local cultural traditions that are bound together by a number of widely shared horizon styles and practices. This cultural heterogeneity, with its coast wide facade of relatedness, has resulted in numerous regional cultural classifications, albeit still collectively recognized as part of a broadly shared cultural pattern (see Carlson 1983a: 16-17). However, many of the horizon styles that are the glue of the broader cultural pattern are often poorly represented on sites. Originally, for example, it was believed that composite toggling harpoons were abandoned by the Marpole complex in favour of the unilaterally barbed harpoon with hafting tang and line hole or guard, despite the former harpoon being present in both the earlier Locarno Beach and the later Gulf of Georgia complexes (Borden 1970). While parts of composite toggling harpoons, such as the lateral valves which served to not only receive the piercing end blade but also to act as barbs (see Fladmark 1986: Black and White Plate 18), have subsequently been recovered from Marpole deposits (Burley 1980: 25; Carlson 1970: 119; 1976; Murray 1982: 44), it does appear to be true that except on the outer coast ofVancouver Island these artifacts are relatively rare along the southern coast until Period V. They appear at the Namu site on the central coast as early as 700 BC (Hester 1978: 108). Harpoons with hafting tangs also vary regionally with line holes being common on the northern coast, line shoulders occurring on the central coast and the outer coast of Vancouver Island, and line guards being typical in the Strait of Georgia (Carlson 1983a: 28). Other implements regarded as being culturally diagnostic, such as projectile point varieties and microblades, tend to have both limited and erratic occurrences. On the southern coast continuities can be seen from Period III to Period IV in the form of cobble tools, leaf-shaped and stemmed projectile points, flake and core tools, microblades including quartz crystal pseudo blades, abraders, ground slate projectile points and knives, adzes, labrets, Gulf of Georgia ornaments also known as whatzits, stone beads, stone sitting bowl figurines, antler carving, bilaterally and unilaterally barbed and toggling harpoons, and antler wedges (Fladmark 1982: Fig.7) but it is noteworthy that the majority of these traits either lack recognized chronological and regional distinctiveness or are extremely rare.

Sometimes it is possible to offer plausible explanations for regional diversity in tool kits. The Locarno Beach and Marpole complexes of the Strait of Georgia have been distinguished from the likewise sequential Baldwin and Skamel complexes of the Fraser River Canyon even though both regions are regarded as being related to the southern coast. Differences between the tool kits of the riverine and coastal regions are likely a product of a number of factors such as the lack of bone artifact preservation in the

Fraser River Canyon, the local availability of soft stone like soapstone for carving, and the specialized focus of the canyon sites on the seasonal harvesting and processing salmon resulting in an abundance of cobble spall fillet tools (Mitchell 1990: 352-353).

In terms of tool kit variability the following generalizations apply: the southern coast, as represented by the Strait of Georgia and the Lower Fraser River, is characterized by a strong stone tool industry consisting of cobble tools, a range of chipped point styles, ground slate points and knives, a change from chipped stone tools to ground bone implements taking place during Marpole complex times, some microblades including pseudo blades struck from quartz crystals; sites on the outer coast ofVancouver Island sites are virtually devoid of chipped stone tools; very little flaked stone is to be found on the central coast where bone tools are typical and ground and pecked stone implements increase through time (Hobler 1990); and on the northern coast flaked stone is common in the Kitselas Canyon of the Skeena River but rare on the coast except for cobble tools although on the Queen Charlotte Islands there is a well developed stone tool industry represented by both cobble and flake tools but usually lacking bifacial forms. There are also regional paradoxes, such as the relatively high frequency of ground slate projectile points on the northern and southern coasts while such items are rare on both the outer coast of Vancouver Island and the Queen Charlotte Islands (Fladmark 1986). Further north, contemporary sites in the Alexander Archipelago of the Alaskan Panhandle are characterized by a groundstone and bone technology that included such items as unilaterally barbed points, ground stone knives, stone hand mauls, burins, and composite toggling harpoons (Davis 1990). During the Period IV occupation of the Hidden Falls site on Baran of Island, Alaska, specific traits shared with contemporary Prince Rupert Harbour sites were chipped points, adzes, shell knives, beaver incisor tools, bone points, decorated stone objects, and pulley-shaped labrets (Davis 1989). The pecked and ground stone bowls, clubs, sculpture, perforated stone canoe anchors, fish net weights, stone hand mauls including zoomorphic forms, and adzes, which are relatively common in the Strait of Georgia, are rare on the central coast and the outer coast of Vancouver Island. Some items, such as the enigmatic ribbed stones of the northern coast, appear to have a very local distribution but others, like stone war clubs, are to be found on the southern and northern coasts and the Queen Charlotte Islands. Similarly, though stone and bone pendants, beads, and labrets are found along the entire coast and, in particular, on the southern and northern coasts, ear spools appear to be restricted to the Strait of Georgia region along with small carved objects referred to as the Gulf Island complex or, more aptly, as 'whatzits'. There is a tendency beginning by 1,500 BC for the increased use of bone and antler for fishhooks, fish spears, projectile points, awls, needles, and unilaterally barbed and toggling harpoons. Some implements, however, have restricted distributions, such as bone and stone fishhook shanks, which are mainly limited to the outer coast of Vancouver Island and the Queen Charlotte

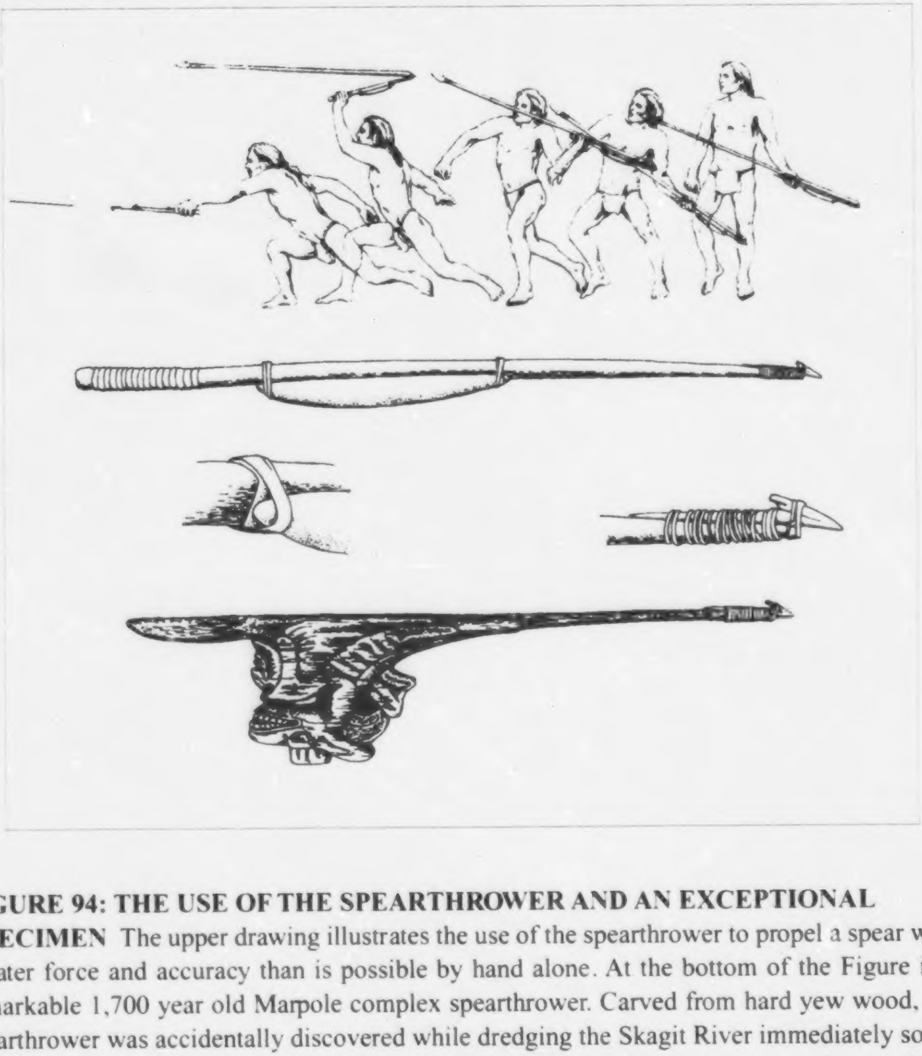


FIGURE 94: THE USE OF THE SPEARTHROWER AND AN EXCEPTIONAL SPECIMEN The upper drawing illustrates the use of the spearthrower to propel a spear with greater force and accuracy than is possible by hand alone. At the bottom of the Figure is a remarkable 1,700 year old Marpole complex spearthrower. Carved from hard yew wood, the spearthrower was accidentally discovered while dredging the Skagit River immediately south of Vancouver in Washington State. The rampant mythical sea creature over a human head anticipates the monumental art in red cedar recorded at the time of European contact. It has been questioned whether this particular artifact was a functional weapon or a ritual object. Additional evidence of spearthrowers have appeared as butt hooks that were attached to the butt end of the spearthrowing board in order to engage the base of the spear. These include a Locarno Beach complex antler, anthropomorphic specimen (Borden 1983: Figure 8:11). (Reproduced with permission from Fladmark 1986: Black and White Plate 11. Art work by Jaclynne Campbell. Scale of the Skagit River spearthrower is approximately 40 cm in length)

Islands. Trends are apparent within the various regional sequences. On the central coast there is technological continuity out of the Early West Coast culture of Period III in the form of flake scrapers, abraders, celts, ulna tools, awls, ornaments, barbed points, fish barbs, and bone wedges but new traits also appear such as end scrapers, gravers, lanceolate and leaf-shaped projectile points, mussel shell adzes, bone composite projectile points, and a range of barbed bone points and gorges (Luebbers 1978: Table 43).

At the end of Period IV the bow and arrow was introduced to the Fraser Delta from the Canadian Plateau (Carlson 1983a: 32; Charlton 1980: 56), as evidenced by the sudden appearance of small corner-notched and side-notched chipped stone arrowheads lacking coastal prototypes, and frequently manufactured from vitreous basalt of interior origin (Borden 1970: 106). Soapstone (steatite) tobacco pipes from the interior appear to have reached the coast about the same time (Carlson 1983a: 28) where they were adopted by Marpole complex people (Charlton 1980: 52), although they may have been initially derived from the Columbia Plateau rather than the Canadian Plateau where they are currently dated to Period V. The sudden appearance of abundant herring bones in the refuse of the Marpole occupation of the Glenrose Cannery site suggested that the herring rake (see Fladmark 1986: Black and White Plate 25) may have been introduced to the area at this time (Matson 1976: 93). Thin ground slate knives of the Marpole complex have been interpreted as specialized knives that improved the processing of salmon for winter storage (Burley 1980). Indirect evidence, in the form of settlement distributions, subsistence, and elements of technology like toggling harpoons, indicate that seaworthy watercraft were in use along the coast from earliest times but direct evidence of watercraft, as elsewhere in Canada, has not been recovered except for paddles from wet sites. A recent piece of evidence relating to the use of heavy watercraft, such as dugouts, has come from the single component AD 100 Marpole complex Point Grey site in the Vancouver area. On the beach facing the site, boat skids composed of cobbles have been recorded (Coupland 1991: Figure 3). It has been historically documented that such skids were used as aids in launching and hauling the heavy dugouts onto the beach.

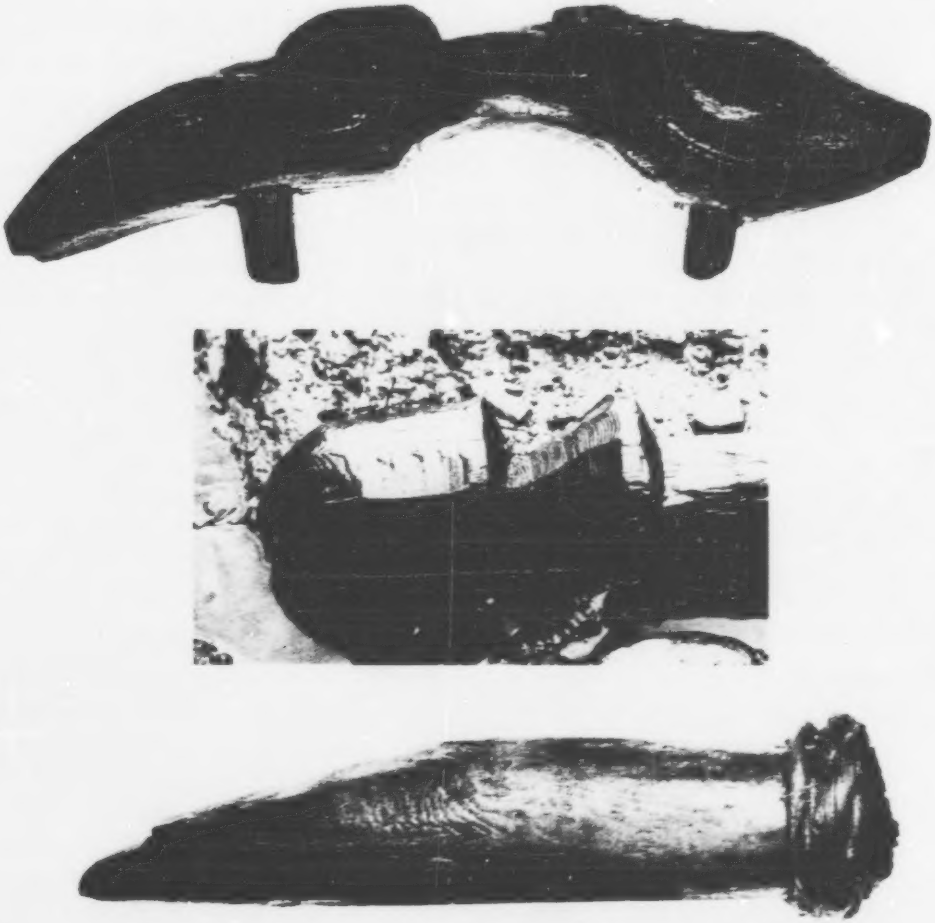
A topic that has aroused considerable interest is when the impressive West Coast art styles first appeared. Based on dated wooden art objects, the existence of "...a basic form line style of design by at least 1500-2000 B.P." is proposed (Fladmark et al. 1987: 10) but there is no direct archaeological evidence that the technical capability to produce monumental art in wood was present. Like the dugout canoes, commemorative and mortuary poles, often erroneously referred to as 'totem poles', could not be expected to survive in the archaeological record. By 2,000 years ago, the technique of carving bone to produce raised features contrasted by negative space, characteristic of the ethnographic form line style, as well as the use of bilateral symmetry of split images and visual punning involving interlocked double images such as whales and humans, were in existence (McMillan and Nelson 1989). Geometric art involving cross-hatching and nucleated circles appears on utilitarian objects throughout the 5,000 year sequence at Prince Rupert Harbour on the northern coast while stone and bone war clubs, mauls, and adzes of zoomorphic form appear as early as 4,000 to 3,000 years ago (MacDonald and Inglis 1976). Bone pendants in the form of canines and humans, labrets, and decorated beaver incisor handles all are present prior to 1,000 BC while jet and shell beads and incised zoomorphic concretions also occur at this time. Zoomorphic bark shredders appear by 500 BC while bracelets, segmented tablets, and carved wooden bowls appear by AD 1 and biconical stone clubs by AD 500 (MacDonald 1983: Figure 6:1). It has been suggested that at least some of the zoomorphic art spread to the northern coast from the southern coast (Borden 1969: 257). Slate shaman mirrors, however, appear to be restricted to the northern coast (MacDonald and Inglis 1981). There is virtually no evidence of art on the central coast until after AD 500 (Carlson 1983b). In the Strait of Georgia on the southern coast the striking art of the Locarno Beach complex (Borden 1983: Figures 8:10 to 8:14) is reflected in a subsequent fluorescence of art objects in the Marpole complex. Marpole art is mainly representational and includes the stylized West Coast eye motif, the starved man motif, and the nucleated circle (Mitchell 1971) as well as seated human bowl figures of Canadian Plateau origin or inspiration. In terms of the representational art, birds, humans (supernaturals?), and 'lightning snakes' dominate (Matson and Coupland 1995: Figure 7-3). Typical of the Locarno Beach complex art are small, highly polished ornaments of a range of shapes, manufactured from serpentine, steatite, pumice, lignite and, more rarely, bone (Mitchell 1971). Such objects are restricted to the Strait of Georgia but they do resemble even earlier ornaments from the California coast (Elsasser 1978). Bone knives with whale tail motifs, elaborately decorated slotted antler cylinders of occasional zoomorphic form, rare stone mortar and ringed sinkers are also found in the Locarno Beach complex (Borden 1983). In the following Marpole complex nose ornaments, pendants and beads, geometrically and zoomorphically incised elk antler brow bands are present with bird forms being a common theme on antler buckles and pestles. The oversized heads and eyes typical of recent West Coast art are also represented. Quantities of ornamental objects in Marpole complex sites can be quite impressive. At the DgRx-5 site on Duke Point, for example, of the 2,191 artifacts recovered 1,196 or 55% were slate, shale, coal, sandstone, siltstone, and shell disc beads plus 4 coal barrel beads (Murray 1982: Table XXXVIII, 228). Of the 10,183 artifacts from the Marpole complex occupation of the False Narrows site (Burley 1988) the 9,675 shell disc, toredo, and dentalia beads from graves represented 95% of the total assemblage. A rare find in the Fraser River Canyon area was a 100 BC wooden box fragment decorated with an elaborate curvilinear design that was accidentally preserved by carbonization (Borden 1983: 155-156).

Critical to an appreciation of Late West Coast technology and, indeed, the culture history of the West Coast in general, is the preserved materials from 'wet sites'. Wet sites represent situations where rising water tables or disposal of wooden and bark objects in water saturated sloughs, with subsequent burial under middens, created an anaerobic or oxygen free environment where the normal processes of decay by bacteria and moulds was inhibited or stopped. Wet sites are relatively common along the West Coast and have been dated from the end of Period III to the time of European contact (Croes 1989a). Such materials provide quite different insights into Late West Coast culture than the usual projectile points and harpoons. There is merit in the observation "...that the major assemblage changes archaeologically observed along the southern Northwest Coast are most probably linked to shifts in adaptations..." and that "...ethnic origins can best be demonstrated through stylistically more sensitive artefacts such as basketry and cordage" (Croes 1987: 281). In the Fraser River Delta, the Musqueam Northeast site water-saturated deposits have been dated to the transition from Period III to Period IV and some of the materials recovered were illustrated in Volume I (Wright 1995: Figure 44). Locarno Beach complex basketry styles at this site are similar to those of the later Coast Salish people of the same region (Borden 1976; Fladmark 1986). A contrary opinion regards the basketry in question as being more elaborate than Coast Salish styles and that basketry styles did not achieve their ethnographic pattern until 1,500 to 1,000 years ago (Bernick 1983: 14; 1987: 253). Particularly common at Musqueam Northeast were large, heavy duty baskets likely used for transporting salmon (Borden 1976: 248). Musqueam Northeast site basketry styles are similar to those of the DgRs-30 site, a Marpole complex wet site in the same region, and a 2,000 year old site in the Seattle, Washington area (Croes 1989a: 126). Large gauge netting, stone weights and sinkers tied with cedar cordage that would have served as weights for nets or set lines, were also present (Mitchell and Donald 1988) as were yew (*Taxus brevifolia*) wedges, abundant wood chips showing adze blows, sharpened sticks and stakes, skewers, digging sticks, tool handles, possible gill nets, and a netting needle. A significant recovery was a massive wooden harpoon shaft that may represent evidence of whaling during Locarno Beach times (Borden 1976: 251). Technological sophistication is apparent in the wooden wedges which were manufactured from the compression wood present on the underside of branches or wind battered trunks of yews, an exceptionally strong portion of an already close grained strong wood. Such segments of the tree possess rounded wood cells with intercellur space and thickened walls giving far greater strength parallel to the grain than normal hexagonal wood cells (Friedman 1976). The longitudinal axis is exactly were the wedge required its greatest strength during its major function of splitting wood.

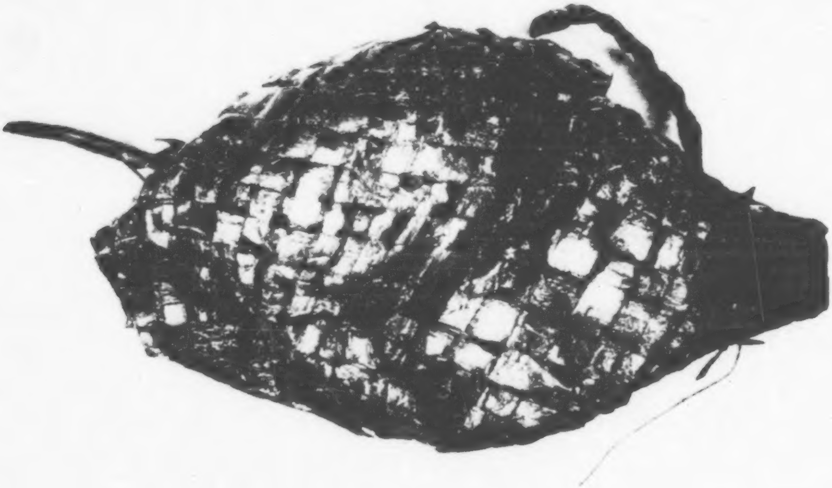
Water saturated deposits, believed to pertain to the Marpole occupation of the nearby Beach Grove site south of the Fraser River Delta, contained wooden wedges, cordage and basketry, the latter being mainly open plain twining in contrast to the common plaited wrapped twining of the Locarno Beach Musequeam Northeast site. The two assemblages, however, do share a number of traits and the "...mixture of similarities and differences is exactly what would be expected if the two collections belonged to the same cultural tradition, separated as they are by 1000 years" (Matson and Coupland 1995: 220-221). Similar Marpole complex basketry styles have been recorded from the Biederbost site outside of Seattle, Washington (Nordquist 1976).

Representative of the outer coast in terms of preserved fibre and wood items is the Hoko River site on the Olympic Peninsula ofWashington State (Croes and Hackenberger 1988: 35). More than 300 composite and bent wooden fishhooks were recovered from the site. Basketry and cordage manufacturing techniques compared most closely with the local ethnographic styles of the Wakashan-speaking Makah despite a bone and stone tool assemblage clearly related to the Locarno Beach complex. Other artifacts were quartz crystal microliths hafted in cedar handles bound with cherry bark (Croes 1989a: 108), wooden wedges, fishing line, unilaterally and bilaterally barbed wooden projectile points, and possible fish net and/or line floats (Croes 1976). Fishline, bent wooden fishhooks, and basketry were the most common recoveries with the fishlines, some still attached to hooks, consisting of double strands of spruce or cedar root. Although the outer coast of Vancouver Island currently lacks a wet site there is early evidence from the Yuquot site of the use of bark in the form of a 1,000 BC whalebone bark shredder, bone shuttles suggestive of loom weaving, and bevelled bone rectangles believed to be either net gauges or basketry creasers (Dewhirst 1980: 339)

On the northern coast, the Lachane site salvage excavations recovered 400 wooden and bark objects (Inglis 1976). Among the objects were shaft fragments, wooden projectile points including barbed specimens, wedges with limb or root grommets to minimize damage to the butt end of the tool, chisel handles, digging sticks, baskets, birchbark trays, bowls, bent-wood boxes, canoe paddles, labrets, an adze handle, and a zoomorphic container handle (Black and White Plate XXXIV). Digging sticks were not only used for excavating plant tubers but also for digging clams and removing bark from trees (Drucker 1951: 35). The wedges, generally of western fir, and the labrets were always made from compression wood for strength while red cedar was used for shafts and boxes. One wooden shaft had been painted with red ochre and carbon black bands. Shafts, wedges, and digging sticks were the most frequent objects recovered. Basketry styles relate to that of the later Tsimshian of the same area. The multistrand twisted cedar bark cordage of the Lachane site is a northern style distinct from that of the southern coast where multistrand cedar bough cordage was used. Lachane basketry was usually made from cedar cordage formed into cylindrical containers. Basket bottoms were formed by checker plaiting and while the body construction could be plaited it



BLACK AND WHITE PLATE XXXIV: WOODEN ITEMS FROM THE 'WET SITE' DEPOSITS OF THE LACHANE SITE, PRINCE RUPERT HARBOUR The saturated deposits of the Lachane site ranged in age from 600 BC to AD 400. Beginning at the top, the five objects are as follows: a zoomorphic cedar box(?) handle dated to AD 300; the knob end of a 1.5 m long post; a lateral view of a 21.5 cm long bevelled western fir (probably *Abies amabilis*) wedge made from compaction wood; a checker weave cedar bark basket; and three views of a labret made from spruce (probably *Picea sitchensis*) compression wood, the dished-out face likely once held some form of inlay. A lack of oxygen in the water-saturated deposits inhibited the usual processes of decay thus providing a glimpse of the rich variety of wooden tools, baskets, and cordage that once were essential elements of Late West Coast culture technology. (Adapted and reproduced from plate illustrations in Inglis 1976)



was generally twined (81%) (Croes 1989). Cordage in the form of both cedar bark strips and twisted cedar bough/roots could range from one to four strands but was generally two strand with diameters from 0.3 to 1.8 cm. String ranged in diameter from 1 to 5 mm and cordage from 6 mm to 2.3 cm. From AD 250 into Period V in Prince Rupert Harbour a number of the jaws of women exhibited evidence that they had used their teeth as tools in cordage production. This practice of pulling the cordage through the teeth had produced grooved occlusal surfaces on anterior teeth, particularly the canines. The process was required in order to produce the fine, uniform spruce root cordage used in weaving (Cybulski 1974: 32-33). In order of importance, the wood species used were as follows: red cedar (*Thuja plicata*); western fir (*Abies* sp.); hemlock (*Tsuga* sp.); yellow cedar (*Chamaecyporis nootkatensis*); spruce (*Picea* sp.); birch (*Betula* sp.); yew (*Taxus brevfolia*); juniper (*Juniperus* sp.): shore pine (*Pinus contorta*); alder (*Alnus* sp.); maple (*Acer* sp.); and crabapple (*Malus* sp.).

Subsistence:

Given the seasonal concentration but uneven distribution of food resources along the West Coast subsistence practices were scheduled in a flexible but still predictable fashion. For a useful consideration of the strengths and weaknesses of faunal analyses to shed light on past human behaviour see Driver (1993a). It is appropriately noted in the preceding article that the factors influencing the composition of an archaeological faunal assemblage are too complex to be ever able to reconstruct diet or the importance of different species (Ibid: 90). Unfortunately, in most 'zooarchaeology' articles insufficient attention is given to the fact that many important foods, both unprocessed (e.g. crab, octopus, sea cucumber) or processed (e.g. dried clams, eulachon oil, meat jerky), do not survive in the archaeological record. The bone fragments recovered from archaeological deposits are the products of complex cultural practices and thus represent a very incomplete record of what was actually consumed and in what quantities. Conditions of availability, including degree of dependability of both anadromous fish and ground fish, were of critical importance. In most instances, marine animals were of greater importance than land animals (Fladmark 1975; Mitchell and Donald 1988: 300-301) with salmon being at the top of the marine food list. On a scale of importance fishing, shellfish gathering, and sea mammal hunting were followed by land hunting and plant gathering. The role of plants, however, cannot be assessed given the scarcity of direct evidence other than to note that the vitamin composition of plants was probably of greater significance in terms of human health than simply the plant contribution of calories to the diet. Over the last 5,000 years along the coast stable carbon isotope ratios indicate that approximately 90% of food consumed was of marine origin (Chisholm et al. 1983). While "...marine foods were overwhelmingly important..." (Driver 1993a:

85), the regular consumption of marine foods can mask periodic heavy consumption of land animals. Winter subsistence was based on stored foods supplemented by shellfish gathering and some hunting.

The foregoing generalizations need to be qualified. Some regions, for example, lacked significant salmon spawning streams (see Mitchell and Donald 1988: Tables 3 & 4) while other areas, such as the Fraser and Skeena river canyons, had seasonal heavy concentrations of salmon. Social factors could effect the kinds of food bones recovered from sites as some villages appear to have been denied access to certain resource areas claimed by other nearby villages. At the McNichol Creek site in Prince Rupert Harbour, occupied around the end of Period IV, subsistence was based upon stored salmon, shellfish, herring, and deer but lacked sea mammals or eulachon (Coupland et al. 1993). As ownership of productive resource areas was likely claimed by certain lineages or other social groupings and as all lineages were not equally wealthy some variability in the subsistence evidence from different villages in the same locale can be anticipated.

There has been a natural tendency in West Coast archaeology to emphasize the importance of salmon over other food stuffs. Even usually predictable species, however, could periodically change their seasonal migration routes. Environmental factors, for example, can effect the migration routes of salmon. Sockeye salmon alter their migration approaches to the Fraser River, either between the Johnstone Strait around the northern end of Vancouver Island or the Juan de Fuca Strait at the southern end of the Island, in response to changes in sea-surface temperature (Mysak and Lin 1990: 138-139). Unlike the Arctic, there is considerable redundancy in the West Coast food-chains but this does not mean that a disruption in a normal pattern of behaviour of a major species would not have had a serious impact upon the people relying upon said resource. Adaptability and opportunism, as always, were keys to survival. Herring trapped in stone fish weirs, for example, brought into reach of the fishermen herring predators such as salmon, dogfish, sea lion, seal, greater scaup, bald eagle, and gull (Monks 1987). Any sweeping generalization regarding subsistence patterns, including the importance of salmon, must be tempered with consideration of the regional availability of specific species as well as the possibility of periodic fluctuations in abundance. Variability in the distribution of animal foods along the West Coast and the possibility of sudden changes, such as the contamination of fish and shellfish beds by red tide, demanded a flexible adaptive system which was capable of falling back on alternate food sources as circumstances dictated. 'Red tide' refers to periodic blooms of one celled organisms called dinoflagellates that can turn water red. As some species of this important base of the food chain are toxic and others use up the available oxygen, sudden concentrations of dinoflagellates can kill fish and make shellfish poisonous to humans. It is recorded that "Indians living along the west coast of N America posted guards on the shore to warn tribes from inland areas..." of the danger of consuming fish and shellfish at certain times (Newman 1967: 1002-1003). Uneven distributions of certain foods would have encouraged the establishment of trade networks. Possessors of a major eulachon spawning river, for example, could trade surplus fish oil in return for a range of nutritional or material necessities while the recipients of the oil acquired an essential food stuff. The well-established trading patterns in various forms of processed foods documented by early Europeans undoubtedly had considerable time depth.

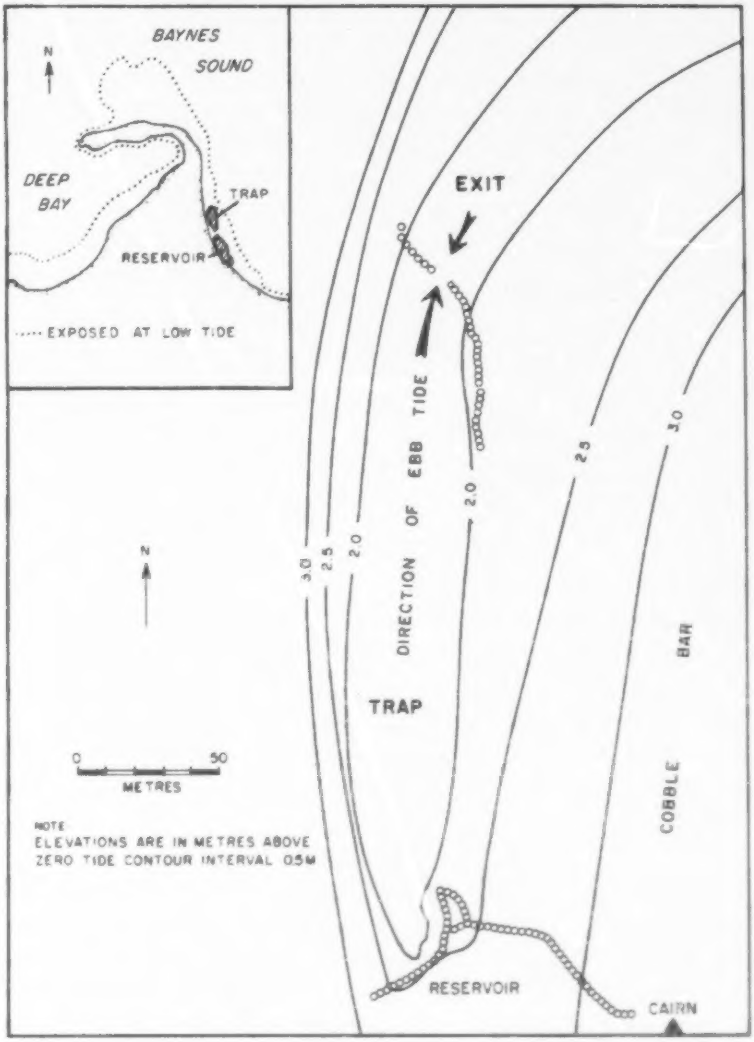
Salmon, eulachon, halibut, cod, herring, and dogfish were among the more important fish. Eulachon and dogfish were sought for their oil while herring roe was probably as important as the fish itself. All of these fish and their byproducts could be stored for winter consumption by drying, smoking, rendering into oil, storing as meat in oil (Mitchell and Donald 1988: 320) or, in the case of herring roe, as sheets of dried kelp with adhering fish eggs. Among groups like the Klingit of the northern coast, considerable time was spent storing various foods throughout the spring and the late summer/fall period (Mitchell and Donald 1988: Table 7). Women were involved in the gathering of shellfish and plant foods, processing food for storage, as well as manufacturing baskets, fabrics, and nets. Men hunted, fished, manufactured traps, and were involved in wood working. Processed products could be exchanged for other goods and thus contribute to balancing the uneven distribution of the various resources along the coast.

It has been suggested that large winter villages could not have developed until techniques for capturing and processing quantities of salmon were extant (Matson 1983). It is further suggested that such techniques were first developed in the Fraser River Canyon region and were then transferred to the coast (Burley 1979). However, the dry air curing methods of the interior, with their leaner salmon (Romanoff 1985), would not work as effectively in the damp coastal environment and therefore the coastal procedures of procurement and processing were likely independent of those of the interior (Matson 1983: 135). Fatty fish, like salmon, pose special problems for efficient preservation. Not only the concentrations of salmon but their fat content and, thus, their suitability for storing, all changed as salmon moved upstream. Chum salmon (*Oncorhynchus keta*), for example, was favoured for drying because of its low fat content (Matson and Coupland 1995: 22). A specialized focus on salmon is generally attributed to the Marpole complex, with the preceding Locarno Beach complex being representative of a more generalized subsistence pattern (Burley 1983: 171). This is an oversimplification. The Locarno Beach complex "...is the earliest period that has good evidence for large-scale processing and storage of salmon, and the first good evidence for salmon "intensification"..." (Matson and Coupland 1995: 175). Relative to capturing large numbers of salmon, there is evidence for the use of wooden fish weirs at the

Glenrose Cannery site between 3,250 and 2,500 BC (Eldridge and Acheson 1992) and on the northern coast prior to Period IV (Moss et al. 1990). The use of weirs subsumes the effective processing of large numbers of fish very quickly. In the Strait of Georgia, the association of the Marpole complex with large winter villages correlates with the marked build-up of shell middens. These findings suggest that, while the harvesting of salmon may well have increased in importance during Marpole times, it did so in concert with an increasing emphasis upon other resources such as shellfish. In this respect, the intensification of resource exploitation during Marpole time was likely broadly based rather than being narrowly focused on salmon. Similarly, on the central coast the eulachon spawning runs begin six months after the salmon have left the river and, therefore, settlement in the Bella Coola area not only accommodated local topography but also the two most critical fish runs of eulachon and salmon (Hobler 1983: 153). At the Glenrose Cannery site in the Fraser River Delta during the Marpole occupation salmon and sturgeon were the two most important fish species (Matson 1981). White sturgeon (*Acipenser transmontanus*) is the largest freshwater fish in Canada, growing to 6.1 m in length and attaining weights of more than 500 kg (Scott and Crossman 1973: 96-100), and are late winter to early spring spawners. The various salmon species run upriver from summer to early winter. The foregoing highlights the importance of viewing species-specific availability as a sequence of events involving a changing focus from one species to another as dictated by time of year. The subsistence shift of the Locarno Beach complex to riverine and littoral resources, including subsurface clams (Mitchell and Donald 1988: 337), was a more dramatic break with preceding Early West Coast culture than any change in subsistence practices between Locarno Beach and Marpole, despite arguments to the contrary (Burley 1980: 71). In general, subsistence changes in the Strait of Georgia region during Late West Coast culture times appear to have been ones of degree rather than kind.

Herring and their roe were an important food but this species, like salmon, is not evenly distributed along the coast. The 2,500 to 2,000 year old occupation of the Deep Bay site in the Strait of Georgia was associated with a stone herring trap (Monks 1987). Although stone tidal and tidal/riverine traps are common along the West Coast (Pomeroy 1976), it has not been possible to convincingly date these features, in most instances, as they continued to be used into recent times. Faunal recoveries from the Deep Bay site were dominated by herring bones and the remains of herring predators such as salmon, dogfish, sea lion, seal, greater scaup, bald eagle, and gull. This chain of predators associated with spawning herring has led to the concept of 'prey as bait' (Monks 1987: 122) where massing herring schools attracted a host of predators into range of the trap fishermen. It is suggested that archaeologists should focus their attention more on food chain exploitation than simply single species. The Deep Bay site also contained an abundance of fishing gear such as bone barbs for composite fishhooks, herring rake barbs, barbed points, and harpoon valves. A sudden appearance of herring remains in the Marpole level of the Glenrose Cannery site in the Fraser River Delta prompted the proposal that the innovation of the herring rake, a device resembling a large rake which was used to harvest herring, occurred at this time (Matson 1981: 75), although the presence of herring rake barbs at the Deep Bay site suggests the device was in use as early as Locarno Beach complex times. Such a proposal is strengthened by the fact that it is in Locarno Beach times that herring first become an important food item on the southern coast (Matson and Coupland 1995: 157). For an illustration of the form and use of the herring rake see Fladmark (1986: Plate 25). In Level I of the DiSo-9 site on the outer coast of Vancouver Island herring remains were most common followed by salmon, midshipman, and other fish species (Haggarty 1982: Figure 47). The primary importance of fishing on the outer coast is also seen at the Yuquot site with salmon, cod, and inshore species being most important (Dewhirst 1980: 339). At the latter site there were very few sea mammal remains and even fewer land mammals although clams and birds, particularly loons, were common. Loons are particularly vulnerable to becoming accidentally entangled in fish nets such as gill nets.

At the 1,000 BC Hoko River site on the Olympic Peninsula of Washington State ground fish, such as flatfish, halibut, and roundfish, were far more important than salmon (Croes and Hackenberger 1988: 76). Identified fish remains from the site consisted of the following: flatfish (45%); roundfish (20%); rockfish (9%); and sculpin (3%) in contrast to 16% salmon (Ibid: Figure 15). The abundance of flatfish head bones and scarcity of post-cranial remains relative to salmon remains indicate that the former were being processed for winter storage while the latter were being eaten fresh. Sun drying of fish fillets in the spring and summer was not only more dependable weatherwise than fall drying, but the higher concentration of Vitamin D resulting from ultraviolet exposure of meat to the sun insured a more nutritious fall-winter storage food. Certainly the dominant position of groundfish at the Hoko River site is reflected in the following total faunal category frequencies: flatfish (53%); roundfish (15%); salmon (15%); land mammals (9%); sea mammals (5%); and waterfowl (6%) (Croes and Hackenberger 1988: 63). Abundant evidence from the Hoko River site of offshore fishing indicates a capability by 1,000 BC to effectively exploit open water fish species (Ibid: 35). The evidence from this site also contradicts the suggestion that intensive subsistence specialization did not occur as early as the Locarno Beach complex (Burley 1980: 71). A focus on offshore spring to summer ground fishing is regarded as being characteristic of the Locarno Beach complex subsistence pattern whereas the shift to salmon during Marpole times is believed to have been forced by increasing population sizes (Croes 1989a: 122). While the foregoing may apply to the local situation, it does not necessarily characterize all Locarno Beach and Marpole complex subsistence patterns.


BAYNES
SOUND
N
DEEP
BAY
TRAP
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EXPOSED AT LOW TIDE
EXIT
DIRECTION OF EBB TIDE
3.0
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2.0
2.5
3.0
N
TRAP
0
50
METRES
NOTE
ELEVATIONS ARE IN METRES ABOVE ZERO TIDE CONTOUR INTERVAL 0.5M
COBBLE BAR
RESERVOIR
CAIRN

FIGURE 95: HERRING TIDAL TRAP AT THE DEEP BAY SITE The trap consists of a natural depression with constructed cobble walls at either end. At high tide, spawning herring as well as some of their predators would enter the trap. With the falling tide, herring attempting to escape the trap through a gap in the northern wall could be captured in dip nets, basket traps, and/or with herring rakes. The main function of the southern wall would have been to control the speed at which water could enter the trap proper from the reservoir represented by the natural depression. It probably also functioned as a secondary trap as suggested by the triangular configuration. (Adapted from Monks 1987: Figures 2 & 3. Drawing by Mr. David W. Laverie)

Most faunal remains from Late West Coast culture sites come from middens and usually cannot be attributed to a narrowly defined archaeological context. An exception are the recoveries from a house floor at the McNichol Creek site in Prince Rupert Harbour. Exclusive of shellfish, fish remains were most abundant. Salmon were common, representing 82% of the fish, followed by Pacific herring (*Clupea harengus*) at 13%. Mammal remains were represented by a mere 4.8% of the house faunal sample and there were very few birds and a total absence of sea mammals (Coupland et al. 1993: Table 2). A scarcity of salmon head remains in contrast to post-cranial elements, with a ratio of 1:280, clearly indicates that the salmon was a processed stored food (Ibid: 63). Salmon were likely captured and processed on the Skeena River system and then brought back to the village as dried winter food. A relatively low occurrence of salmon remains in the house in comparison to the large shell midden behind the dwellings, probably reflects the fact that the salmon had already been processed whereas local foods, like herring and deer, that were more common in the house, were probably being processed inside of the house. Shellfish gathering at the McNichol Creek site was mainly a spring to early summer activity to judge from the study of shell incremental growth structures (Ibid: 68-70). At the nearby and larger Boardwalk site the faunal evidence suggests that the village was occupied year round (Stewart and Stewart 1996) thus differing from the Tsimshian pattern during the European contact period of only occupying the villages during the winter. Areas A and C of the archaeological excavations at this site span the period of 2,200 BC to AD 750 and thus pertain, in large part, to Period IV. Fish remains at the Boardwalk site are likely under represented due to the archaeological recovery methods employed. Column sediment sampling is now a common archaeological field method in British Columbia where recovery of very small bones provides a more accurate record of the wide range of resources exploited (Driver 1993a: 79). Fish consisted mainly of salmon and flatfish. Birds were common, particularly waterfowl such as loons, cormorant, and grebe (Stewart and Stewart 1996: Table 3) suggesting accidental capture in fish nets. Mammal remains were abundant, particularly sea mammals of which sea otter (*Enhydra lutris*) was most common. Sea mammal abundance stands in sharp contrast to the faunal evidence from the nearby McNichol Creek site suggesting that the villagers of the latter site were excluded from access to sea mammal hunting areas. Regarding land mammals, dog or wolf, likely the former, and beaver remains were most common (Ibid: Table 4).

The most continuous record of subsistence practices on the West Coast comes from the Namu site on the central coast (Cannon 1991). Period IV most closely correlates with Period 5 of this site (4,000 to 2,000 years ago). Trends through time were an increase in shellfish remains and a change from exploiting mussels and barnacles to digging clams. Estuary maturation and a rise in sea level on this section of coast around 3,500 years ago would have favoured clam habitat but not salmon. In fact, it is suggested that a 'near collapse' of the salmon fishery in the Namu River resulted from rising sea levels that impacted unfavourably upon spawning beds. Herring also appear to have declined in importance. Formerly marginal fish varieties, such as ratfish (*Hydrolagus colliei*) and greenlings (*Hexagrammos* sp.), supplemented the decreased availability of salmon. Seal, other sea mammals, and land mammals, become less frequent through time.

A characteristic of all Late West Coast culture sites is the gathering of shellfish. During the Marpole complex occupation of the Glenrose Cannery site the calculated meat weight derived from mussels indicated that they were more important than all of the mammals combined (Matson 1981: 78). Such calculations can be deceptive in terms of actual caloric intake but the figures do reveal that shellfish were an important component of the diet. At another Marpole complex occupation in the same area of the southern coast the shell midden was largely made up of cockle (*Climcarium nuttallii*), butter clam (*Saxidomus giganteus*), horse clam (*Schizothaerus nuttallii*) and bay mussel (*Mytilus edulus*) (Seymour 1976). A shellfish baking feature excavated at the Point Grey single component Marpole complex site consisted of a 2 m diameter shallow pit surrounded by large cobbles and filled with fire cracked rock, ash, and burnt shell (Coupland 1991: Figure 6). At the same site both foreshore and quiet water shellfish species consisting of clams, cockles, whelks, mussels, and barnacles were present although the remains of herring were most common followed by flatfish and salmon. There was little evidence of birds or mammals. An interesting shift in the varieties of shellfish exploited from Locarno Beach to Marpole times is apparent at the Montague Harbour site off the east coast of Vancouver Island (Mitchell 1971: 182). In the earlier levels the harvesting of rock-clinging versus burrowing shellfish was about balanced while during the later occupation there was a far greater reliance upon burrowing shellfish. This shift through time from mussels to clams appears to be a coast wide phenomena (Mitchell and Donald 1988: 340). Mussels are somewhat higher in calories by weight than clams although clams can also contain vitamins A and B-2. Both are rich in minerals (Pennington 1989: 85 and 88). Perhaps because mussels could simply be gathered from the rocks at low tide while clams had to be laboriously dug from the mud flats, they were initially over exploited forcing an increasing reliance upon clams. Between 1,000 BC and AD 800 at the Yuquot site on the outer coast of Vancouver Island shellfish gathering would have been a summer activity although shellfish meat could be dried and stored for winter use. It has been calculated that over 5,000 kg of shellfish edible meat was represented in the entire midden (Clarke and Clarke 1980: 55). In the 200 BC level of the Yuquot site the presence of the barnacle (*Coronula reginae*) indicated the capture or scavenging of a humpback whale (*Megaptera nodosa*) as this particular species of barnacle only imbeds itself in the flesh of the humpback (Fournier and Dewhirst 1980: 96). On the northern coast in the Prince Rupert area intensive shellfish gathering characterized the sequence with heavy shellfish harvesting taking place in winter and spring and a less intensive summer to fall harvest (MacDonald and Inglis 1981). This seasonal exploitation pattern stands in contrast to the Strait of Georgia situation where annual shell growth ring studies suggest that shellfish were gathered throughout the year but most intensively in the summer (Keen 1975). Most of the Prince Rupert shell remains bore evidence of having been subjected to heat. Varieties of shellfish represented were butter clam, little-neck clam, basket cockle, horse clam, common and giant mussel, barnacle, limpets, and whelks. While shellfish gathering on the central coast appears as early as 3,000 BC, it did not approach the ethnographic pattern until 1,000 BC (Chapman 1982). At the Namu site around 1,000 BC shellfish gathering increased dramatically with the major species being acorn barnacle (*Balanus* sp.), butter clam, horse clam, and wrinkled and purple gastropods (*Thais* sp.) (Conover 1978). Most of these shellfish represent intertidal forms. On the southern coast there was more than 9,000 years of relative consistency in resource exploitation but it involved an increasing shift away from land animals to marine and littoral/riverine resources, particularly shellfish and fish, with the major change occurring around Locarno Beach complex times (Mitchell and Donald 1988: 337).

It is difficult to evaluate the accuracy of the proposal that intensive shellfish exploitation began around 3,000 BC in conjunction with coastal stability (Fladmark 1975) as the archaeological visibility of the pre-3,000 BC sites has been markedly reduced by fluctuating sea levels on the northern coast and a sinking coastland on the southern coast (Clague et al. 1982). Such fluctuations in the sea-land interface and thus the littoral environment would assure that shellfish would have had greater difficulty in establishing themselves and would not have been as abundant as when the littoral environment became more stable.

The most common land mammals eaten by Late West Coast culture people were deer, bear, dog, and on the Queen Charlotte Islands, caribou. Excluding the Namu site on the central coast (Cannon 1991), there is some evidence from the northern coast, as with the southern coast, that fishing and sea mammal hunting increased in importance relative to land hunting although the subsistence strategy was still broadly based (Fladmark et al. 1990; Mitchell 1988: 280). A similar trend has been noted in the Queen Charlotte Strait region of northeastern Vancouver Island and the adjacent mainland (Hogg 1986). Domesticated dog bones are encountered with some frequency in the middens as in the Marpole occupation of the Whalen Farm site in the Fraser River Delta (Seymour 1976). In the Namu site the frequency of dog remains was only exceeded by those of deer (Conover 1978) suggesting they were an important food item (Hester 1978: 110) in addition to their more common function as aids in the hunt, providers of wool, and companions. At the Glenrose Cannery site in the Fraser River Delta bear, elk, and deer were the land species that provided the most usable meat (Matson 1981). Deer and elk were also the most important land mammals at the Montague Harbour site (Mitchell 1971). As a rule, land mammal hunting retained its importance during Period IV except along the outer coast of Vancouver Island (Conover 1978). Here, and on the adjacent Olympic Peninsula of Washington State, there is 5,000 years of continuity in subsistence focus with, in terms of mammals, whales, seals, and porpoises being more important than deer (Mitchell and Donald 1988: 337). In contrast, at the Montague Harbour Locarno Beach occupation off the east coast of Vancouver Island sea mammals were absent although in the following Marpole occupation harbour porpoise (*Phocaena vomerina*) and hair seal (*Phoca vitulina*) were present. Similarly, during Period IV at the Namu site on the central coast the presence of minor amounts of delphinids, sea lion, and seal indicate some sea mammal hunting but is was relatively minor in comparison to the exploitation of the land mammals of the coastal forests (Cannon 1991; Conover 1978).

The hunting of birds appears to have only been of incidental importance. Frequently encountered diving birds, such as loons, suggest accidental entrapment in nets set for fish. In Zone II (1,000 BC to AD 800) of the Yuquot site on the outer coast of Vancouver Island, however, substantial numbers of birds were captured although only the Short-tail Albatross (*Diomedea albatrus*), a number of species of geese, and, to a lesser extent, cormorants appeared in any abundance (McAllister 1980: Figure 8).

Certain ethnographically documented important animal foods, such as crab, octopus, squid, and sea cucumber do not leave any trace in the archaeological record and, therefore, their contribution to the food supply cannot be assessed. There is also the problem that many of the food preservation methods used, such as drying fish fillets and clam meat away from the village, leave little or no archaeological evidence of what was undoubtedly an important component of the winter food supplies. There is also little direct evidence of plant consumption due to a combination of factors such as preservation, inadequate archaeological recovery methods in the field, and food processing methods. Wet sites, with their preserved plant remains, could potentially make a contribution to knowledge in this area but sampling procedures oriented towards the recovery of microscopic seeds and plant macrofossil tissue will have to be applied. Such procedures are now being instituted along the coast (Driver 1993a) but the results are only beginning to appear in published reports (e.g. Cannon 1991: Appendix C).

Under exceptional circumstances plant materials are preserved, such as the large quantities of red elderberry seeds from the Marpole complex occupation of the Whalen Farm site. This discovery was the basis for suggesting that one of the main functions of the site was berry processing (Hammon 1986). Indirect evidence can sometimes be used to speculated on the importance of food plants. Blue camas (*Camassia quamash*), a documented staple of the Coast Salish, is abundant on Gabriola Island and may have been one of the reasons for the occupation of the False Narrows site in conjunction with the availability of shellfish and herring (Burley 1988). At the time of European contact more than 200 plant species were used by West Coast people for food, medicine, and other purposes. Plant foods would have been particularly important in the early spring when stored food stocks were exhausted (Turner 1975). Berries, sprouts, leaves, seaweed, roots, bulbs, rhizomes, and tree cambium would have made a vital nutritional contribution to a predominantly fatty meat diet. Herring spawn on kelp (*Macrocystis integrifolia*) and red laver (*Porphyra perforata*) were stored for winter use while fern fiddle heads and rhizomes (*Polypodiaceae*), horsetail shoots (*Equisetacae*), the tubers of arrow head (*Sagittaria latifolia)*, blue camas, rice root (*Fritillaria camschatcensis*) on the northern and central coasts and, on the southern coast, its equivalent chocolate lily (*Fritillaria lanceolata*), cow parsnip (*Heracleum lanatum*), elderberry (*Samhucus* sp.), high bush cranberry (*Viburnum edule*), bunchberry (*Cornus canadensis*), soapberry (*Shepherdia canadensis*), salal (*Gaultheria shallon*), Alaskan blueberry (*Vaccinium alskaense*), mountain bilberry (*Vaccinium membranaseum*), oval-leafed blueberry (*Vaccinium ovalifolium*), bog cranberry (*Vaccinium oxycoccus*), red huckleberry (*Vaccinium parvifolium*), bog blueberry (*Vaccinium uliginosum*), perennial clover (*Trifolium wormskjaldii*), stink currant (*Ribes bracteosum*), common wild gooseberry (*Ribes divaricatum*), Saskatoon berry (*Amelanchier alnifolia*), wild strawberry (*Fraqaria chiloensis*), Pacific cinquefoil (*Potentilla pacifica*), wild crabapple (*Pyrus fusca*), thimbleberry (*Rubus parviflorus*), and salmonberry (*Rubus spectabilis*), were the most common edible plants (Turner 1975). Unlike in the Canadian Plateau, on the coast bracken rhizomes was "...an almost universal food..." (Turner 1978: 49). Nodding onion (*Allium cernuum*) was also popular and blue camas, in addition to being a staple of the Coast Salish, was also a major trade item out of Washington, Idaho, and Montana.

The preceding potpourri of somewhat repetitive information is intended to convey an impression of the complexity of Late West Coast culture subsistence and the numerous factors influencing it. A rarely emphasized aspect of West Coast culture but one of its most unique accomplishments was the level of cultural complexity achieved by people whose economic base depended upon fishing, hunting, and gathering. Cultures of equivalent complexity all were based upon a horticultural economic base. In a real sense, the people of the West Coast treated their animal and plant resources like farmers and, as a result, achieved a similar level of economic stability. Subsistence patterns, in conjunction with other cultural systems, underlay this utilization of the natural food resources of an admittedly exceptionally rich ecology.

Settlement patterns:

Archaeological excavations have focused on the large shell midden sites along the coast. Often late Period III, Period IV, and Period V occupations are all present on the same sites. In exceptional cases, such as the Namu site, virtually the entire record of human occupation of the coast is in evidence. In order to establish chronologies and local culture history sequences the concentration of excavation efforts on these large sites, with their generally excellent bone preservation, is understandable. Being situated on the coast such sites are also frequently threatened by economic development and, thus, become the objects of salvage excavations. Archaeological materials from shell midden sites, however, present certain problems for archaeological analysis and interpretation. It has proven difficult to maintain control over the chronological development of sites whose occupations often span thousands of years. Repeated seasonal and/or continuous year round occupations of the same sites have tended to disturb earlier deposits resulting, to varying degrees, in the mixture of cultural debris and the obliteration of earlier features. The great depth of many shell midden deposits causes difficulties in terms of both the time and cost of exposing sufficiently large areas to reveal house floors, particularly given the large size of the dwellings. With few exceptions, evidence of the historically documented large plank houses is very incomplete. Concentration on the excavation of shell midden sites has also resulted in a curtailed appreciation of the distribution and nature of special purpose sites such as quarry and hunt camp sites.

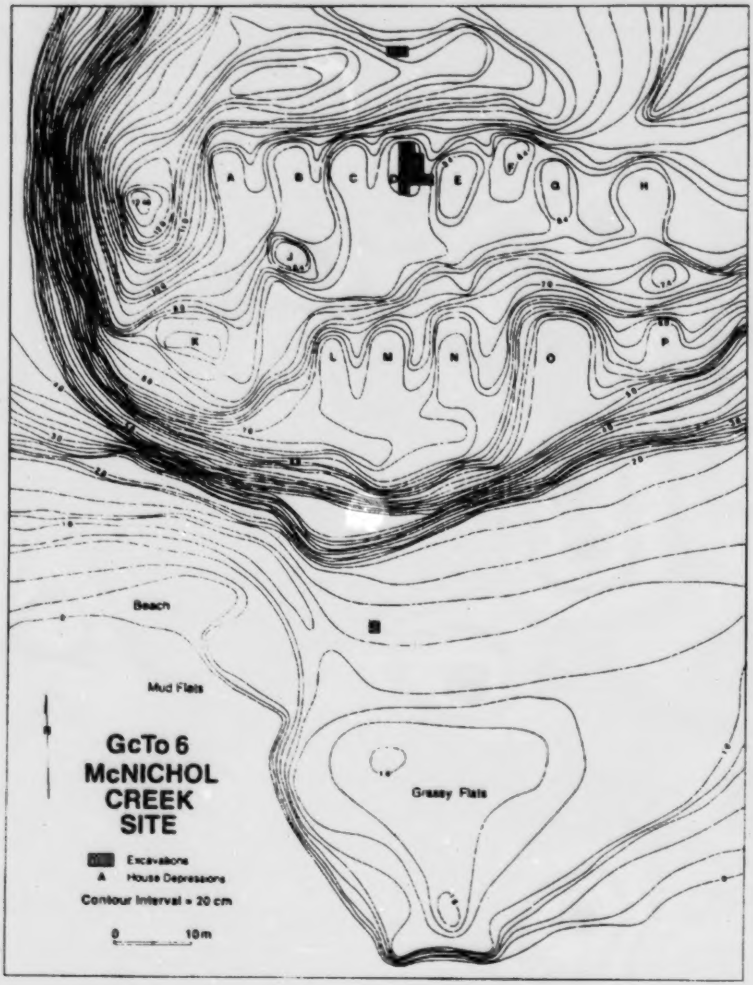
Access to clam flats, shelter, shorelines suitable for hauling heavy dugout canoes in and out of the water, a reliable supply of fresh water, and a range of available food resource areas, would all be factors bearing on the location of the winter villages. Such occupations "... represented small-scale domestic economies, seldom involving more than a few hundred people" (Mitchell and Donald 1988: 297) although autonomous groups interacted with one another and collectively would have numbered in the thousands. Attempts to correlate village distributions with resource rich locales encounter problems due to seasonal mobility by water transport, the practice of food storage, and inter-group trade in food stuffs (Hobler 1983: 150). This, of course, does not deny the fact that people were required to be at a specific location at a specific time of the year in order to harvest a specific resource. But within the ebb and flow of the food chain there was considerable flexibility. An entire village, for example, could temporarily move some distance to a favourite salmon fishing region and then return to the traditional winter village with the dried salmon stores as well as the portable house planks that had earlier been removed from the house frames of the winter village.

The partial isolation of populations in sounds and large inlets, due to the difficulty of getting around headlands during bad weather (Drucker 1951: 7), likely was common to the entire coast. Much of coastal British Columbia settlement distributions were controlled by rugged shorelines unsuitable for human settlement (Hobler 1983: 153).

Along the entire coast, the most concentrated occupation of shell midden sites pertains to Late West Coast culture times and later. Period IV is when the most massive build-up of shell and refuse occurred (Fladmark 1982: 115; Hobler 1990). Most of the faunal evidence indicates winter occupation of sites although there are, as always, exceptions. The abundance of herring bones at the Deep Bay site in the Strait of Georgia points to a late winter to early spring occupation (Monks 1987: 132). Occupied for the past 2,000 to 2,500 years the site was associated with both a stone fish trap (Figure 95) and a fortification; the latter suggesting a need to defend desirable resource locales from others. Clam shell annual growth ring studies pertaining to the Marpole occupation of the Glenrose Cannery site indicated a winter occupation, as did the abundance of herring bone and the absence of late spring to early summer spawning fish such as stickleback and eulachon (Matson 1981). The Point Grey site, in the same area, was a large, late winter to early spring village where herring were a major attraction, an observation supported by shellfish seasonal growth patterns (Coupland 1991). Occupants of the village likely moved 'en masse' after the herring run to another resource area. Thus, the Marpole complex people likely had both summer and winter villages as well as some villages that were occupied year round. Situated off the east coast of Vancouver Island, the False Narrows site was a spring to early summer occupation with midden deposits extending 1.3 km along the shoreline (Burley 1988). Features consisted of hearths filled with fire cracked rock, shallow food steaming (?) pits, and an abundance of fire fractured rock indicative of boiling, steaming, and baking foods. An inland contemporary fortification near the False Narrows site is also recorded as are pictographs on boulders (Ibid: Figure 11). Evidence of trade included nephrite from the Fraser River Canyon, obsidian, mainly from the Garibaldi deposits on the mainland north of the Lower Fraser River but with some evidence of Oregon obsidian and possibly some from the central coast, dentalia from the outer coast of Vancouver Island, and native copper that could be either local or from the Copper River in Alaska. In the Johnstone Strait region sites tend to concentrate in sheltered island clusters between the mainland and Vancouver Island (Mitchell 1969: 207) with few sites occurring along the fjords or the shores of either the Queen Charlotte or Johnstone straits. In large sections of the southern coast sites were oriented to the salmon migrations to the mouth of the Fraser River whether it involved riverine or reef fishing situations and particularly so during Marpole times (Burley 1980: 54-55; Mitchell 1971: 52).

At the Namu site on the central coast, the occupation appears to have been supported by a broadly based exploitative pattern with a heavy reliance upon shellfish (Cannon 1991; Conover 1978). X-Ray study of annual growth patterns in fish vertebrae, permitting the identification of specific species of salmon, suggested that for over 4,000 years a consistent pattern of taking chum salmon (*Oncorhynchus keta*) and coho salmon (*Oncorhynchus kisutch*) existed. This would, in itself, indicate a fall occupation of the site (Cannon 1988) but in conjunction with herring and seal pup remains identifies a fall-winter village (Cannon 1991: 61). The combination of salmon and shellfish was critical at the Namu site in the maintenance of the 7,000 years of continuity where faunal evidence was available. The only exception to the foregoing was an environmentally caused adjustment part way through Period IV when salmon became scarce. The 3,000 year long occupation of the McNaughton Island site on the central coast to the north of Vancouver Island (Carlson 1976), on the other hand, was most likely during warm weather to judge from the site's exposed location at the northern end of an outer island. A spring to fall occupation is also suggested by the abundance of northern fur seal bones (*Callorkinus ursinus*), a pelagic or deep water species that would be most available during its southern migration in the fall and the returning northward migration in the spring (Banfield 1974: 359-362). Other sea mammals represented were sea lion (*Otariidaie*), harbour seal (*Phoca vitulina*), and porpoise/dolphin (*Delaphinidae*). Salmon and ling cod were the most common fish, also suggesting a summer to fall occupation. Caution must be exercised, however, in uncritically using salmon remains as a seasonal indicator since dried salmon would have been consumed in the winter (Ford 1989:142).

On the northern coast it has been speculated that the late Tsimshian settlement pattern was in place for possibly 5,000 years (MacDonald et al. 1987). This pattern involved occupation of the large shell midden sites in the late fall and winter when some shellfish gathering and sea mammal hunting took place but most activities related to ceremonial and social events. In late winter to spring there was a move to the Nass River to harvest and process eulachon oil and trade. By late spring some people would return to the winter village while most moved to the outer islands in search of pelagic fish, sea mammals, and sea weed. Rounding out this seasonal round was the summer to fall movement to the Skeena River to catch and process salmon, carry out hunting and gathering tasks and trading prior to returning to the winter village. Contrary to the foregoing ethnographically driven scenario regarding seasons of village occupation, faunal evidence from the Prince Rupert area pertinent to Period IV suggest that some villages, such as the Boardwalk site, were occupied year-round (Stewart and Stewart 1996). The McNichol Creek site, also in Prince Rupert Harbour, was mainly occupied from winter to mid-summer with some possible year-round occupation (Coupland et al. 1993: 70). At this site, two rows of rectangular structures to one side of a fresh water creek faced onto a tidal flat. A large shell midden had been deposited at the back of the dwellings. The fifteen houses measured approximately 11 by 6 m with an estimated average of 10 to 12 people per dwelling. Though the site dates to the end of Period IV,


A
B
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O
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Beach
Mud Flats
Grassy Flats
GcTo 6
McNICHOL
CREEK
SITE
Excavations
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FIGURE 96: THE McNICHOL CREEK SITE PLAN The fifteen rectangular house depressions are marked by Roman capital letters and indicate a community plan of two parallel rows of dwellings facing the sea and overlooking a clam mud flat. A large shell midden is present behind the dwellings. Faunal analysis from the site suggest that certain resources, such as sea mammals and eulachons, were not available to the occupants. Presumably other villages in Prince Rupert Harbour owned these resource areas and denied the McNichol Creek site people access to them. This, in turn, supports the probability that at least near the end of Period IV, and probably earlier, not all villages in the same general locale were 'born equal' in terms of hereditary access to certain categories of food resources. (Reproduced with permission from Coupland, Bissell, and King 1933: Figure 2)

the structures resemble those of the transitional Period III/IV Paul Mason site in the Kitselas Canyon of the Skeena River (Coupland 1988).

Submergence beneath the sea has likely destroyed sites in the Prince Rupert Harbour area dating from 8,500 BP to 3,800 BC (Clague et al. 1982). The reader will recall that radiocarbon dates in this work can only be calibrated into calendar years as far back as 7,240 radiocarbon years (Klien et al. 1982) and thus the BP (Before Present) designation for the early part of the preceding date range. Survey for post 3,800 BC sites in the harbour area located 59 shell midden villages and 85 shell midden camps, 6 lithic scatters, 1 canoe run, 19 rock art sites, and a cave burial site (Coupland 1993: Table 1). Large scale human abandonment of Prince Rupert Harbour appears to have taken place between AD 1 andAD 500, due to either warfare with population displacement or the coalescence of smaller villages into larger ones (Coupland 1993: 57).

It was initially thought that the Locarno Beach complex hunters specialized in hunting sea mammals. Recent research indicates that the Locarno Beach complex subsistence pattern was similar to subsequent subsistence practices (Mitchell 1990: 341 & 345). This point of view is supported by the fact that Locarno Beach complex people sought out the same site locations as their Marpole descendants suggesting a similar subsistence orientation; a proposition largely borne out by the faunal remains except for the heavier emphasis upon subsurface molluscs and salmon in Marpole times. Locarno Beach sites, however, do tend to be more common offshore than along a major salmon river like the Fraser in contrast to subsequent Marpole complex sites (Matson and Coupland 1995: 161).Another settlement feature attributed to the Marpole complex, but believed to be absent from the Locarno Beach complex, was the construction of large plank houses. The evidence of such dwellings in the Marpole complex is represented by the presence of large post moulds up to 1 m in diameter that represent the remains of the upright posts that once supported massive house beams (Mitchell 1971). Wooden planks would then sheath and roof the structure. There is also some evidence at this time of houses being arranged facing the beach with the garbage being dumped behind or between houses. House units measuring 9.1 by 10.6 m to 12.2 m square, with interior hearths, have been recorded (Mitchell 1971). At the Beach Grove winter base camp a lineal arrangement of 10 to 12 Marpole complex dwellings with minimum estimated dimensions of 10 by 13 m were recorded (Matson and Coupland 1995: Figure 7-4A). Although still a matter of some contention, the evidence does suggest the likelihood that the Locarno Beach complex people also constructed plank houses. For example, the presence of large antler and wooden wedges, a tool that was mainly used for plank production, supports the speculation of plank houses in Locarno Beach times (Croes 1976a: 293; Mitchell 1971: 59; 1990: 344). Further support of this proposition is the evidence of a large house structure in the 1,000 BC level of the Shoemaker Bay site

(McMillan and Claire 1982: Figure 54) described in the chapter on Early West Coast culture in Volume I of this work. If the rock-filled trench paralleling the line of large post moulds represents the southern wall of a plank structure and if the structure was bilaterally symmetrical in line with the row of central posts then a dwelling of unknown length but 16 m in width was involved. The posts in the structure were from .8 to 1.0 m in diameter, spaced 4 to 5 m apart, and were associated with a stone outlined hearth filled with fire cracked rock. It may be speculated that the rock-filled trench, paralleling the line of posts was a wall trench. This trench was exposed for a distance of 13.5 m, was 35 to 45 cm wide, 50 to 60 cm deep, and contained refuse capped with large cobbles. It was straight except for a 0.5 m break where it took a short bend into the proposed house, a modification that could represent the remains of a narrow doorway. The archaeological deposits associated the structure pertain to the Locarno Beach complex in terms of diagnostics although, as was suggested in the section on **Technology**, there appears to also be a technological relationship with the outer coast of Vancouver Island as indicated by the abundance of abraders and toggling composite harpoons. An appearance of plank houses in the Strait of Georgia by at least 1,000 BC would also be in accord with their pre-1,000 BC presence on the northern coast (Coupland 1988). At the DeRt-1 site, on North Pender Island in the southern Strait of Georgia, there was evidence of a probable dwelling dated to 400 BC. To judge from the post mould pattern this structure was approximately 6 m wide and contained a rock slab hearth, a stone storage cyst, a rectangular cache pit, and other features (Carlson and Hobler 1993: Figure 4). In contrast, the earliest evidence of large structures at the Yuquot site on the outer coast ofVancouver Island is 200 BC (Dewhirst 1980: 339). Part of the problem of when the earliest plank houses appeared on the West Coast is the difficulty in delineating such large structures in the continually occupied and disturbed shell midden deposits. Abundant evidence of the importance of wedges on the southern coast by 1,000 BC and the Shoemaker Bay structure, however, make it increasingly likely that earlier plank house structure will eventually be uncovered. Other dwelling types were also used, such as a small 'pit house' approximately 4 m in diameter in the Locarno Beach winter occupation of the Crescent Beach site (Matson and Coupland 1995: 175). The 25 cm depth of this dwelling (Ibid: Figure 6-3), however, does strain the limits of its classification as a pit house. Features encountered in shell midden sites consist of burials, hearth floors composed of fire cracked rock often surrounded with a ring of cobbles, baking ovens and, on occasion, scattered post moulds. In the Locarno Beach complex clay-lined depressions with vertical sandstone uprights of unknown function have also been recorded. An unusual characteristic of the DiSo-9 site on the outer coast of Vancouver Island was the presence of the shell midden in a cave (Haggarty 1982).

In the Lower Fraser River region circular, oval, and subrectangular pit houses of Late Plateau culture style appear by 500 BC in the Skamel complex but only at some sites (Von Krogh 1976). Associated with these dwellings are hearths and cache pits. Such pit houses are absent from the preceding Baldwin complex. At the Kats site, dating to Marpole complex times, there were two rows of 20 "...regularly spaced house pits..." (Matson and Coupland 1995: 228). It is possible that these dwellings pertain to an over-wintering population. In this regard, the region may have been occupied by both a resident population and seasonal visitors from the coast. Such a possibility highlights the frontier position of the region in terms of coastal and interior peoples. Most sites in the Lower Fraser River region, however, lack evidence of dwellings or even many features such as hearth floors (Eldridge 1981). In the Kitselas Canyon of the Skeena River to the north, in contrast to the situation on the Lower Fraser River, large multi-family dwellings arranged according to a village plan have been recorded. The Paul Mason site was considered in the chapter on Early West Coast culture in Volume I but it appears that similar structures pertain to Period IV in the area as indicated by the McNichol Creek site floor plan (Figure 96). The Paul Mason village was composed of 10 square, essentially similar houses, and is interpreted as representing a corporate group who would eventually develop into a ranked society between 500 BC and AD 500 (Coupland 1988). Empty cache pits behind the houses are believed to have been associated features (Coupland 1988a: 231). By 1,000 BC the focus on salmon fishing in the Kitselas Canyon resulted in a year round occupation. This was probably necessary in order to maintain control over the resource even though the control was in the hands of an egalitarian corporate group rather than an elite (Ibid: 237).

In summary, it is appropriate to view West Coast village settlement patterns during Period IV as semisedentary with considerable seasonal mobility, particularly during the warmer weather. Although the winter village was undoubtedly of importance, it is apparent that there was considerable variability regarding the seasons of most intensive occupation. Possibly during the warmer weather a smaller resident population, made up of older people, indigents, and some women and children stayed in the village along with sufficient warriors for defense. It is becoming increasingly clear that the archaeological evidence of duration of village occupation does not always accord with the ethnographically documented pattern.

Cosmology:

Glimpses of Late West Coast culture cosmology can be provided by rock art, art objects in general, certain varieties of artifacts, modified human remains, special features, and burial practices. The foregoing, of course, represent very incomplete glimpses of the rich ceremonial life of the West Coast Indians as recorded in the late 19th and early

20th centuries by Europeans. Limited as it is the evidence still permits some insights regarding the time depth of later practices.

Within a common West Coast art style there are three major stylistic regions roughly correlating with the northern, central, and southern coasts with the central coast being in an intermediate position (Holm 1990: 605). Art style attributes extending from pre-European times to white contact are as follows: exaggeration of head size; flexed limbs; emphasis on eyes, mouth, and other facial features; humans shown frontally in two dimensional art and animals in profile; and certain specific details such as round or ovoid eyes with pointed lids and skeletal details. Art was likely related to individual and group privileges where "There was a religious component in the secular arts of the northern tribes, as elsewhere on the coast, in the concept that man related to spiritual and powerful forces permeating the world about him, and these forces were embodied to a degree in the crests" (Holm 1990: 604).

It has been speculated on the basis of natural weathering, art styles, and association with lower sea levels that at least some of the rock art found along the coast of British Columbia pertains to the 1,500 years of Period IV (Fladmark 1986: 80). Beyond stylistic considerations, there are two basic forms of rock art; petroglyphs that were pecked or ground into rock faces and the more common pictographs that were painted on rock. Rock art sites tend to be associated with nearby villages (Simonsen 1973) but some are isolated from human habitation or are associated with important fishing stations (Fladmark 1986). While it cannot be demonstrated, it is probable that at least some rock art was related to shaman rituals, such as 'calling' the salmon back to the river. At the time of European contact, rock art also functioned as territorial and resource claims, e.g. 'No Fishing Without Permission of Owner', as well as their more central function of portraying records of important supernatural and natural events in clan traditions. Certain stylistic correspondences between coastal British Columbia and Siberian Neolithic rock art suggests a considerable antiquity for the practice as do the resemblances to certain stone sculptures on the Columbia River dated between 4,500 BC and AD 500 (Lundy 1983: 92). On the northern coast, rock art is estimated to be "...several thousand years old at the minimum" (MacDonald 1983: 117). Rock art along the entire coast reflects "...both tremendous variety and also a curious repetition..." (Lundy 1983: 89). It occurs in conventionalized, naturalistic, and abstract forms but is mainly a conventionalized art form which differs from the art expressed in the sculpture of stone and wood by being essentially a simplified form of West Coast art.

The human seated figures holding bowls found in the Marpole complex of the southern coast, which are generally less than 30 cm high and usually dated between 500 BC and AD 500, are often found isolated from habitation sites suggesting association

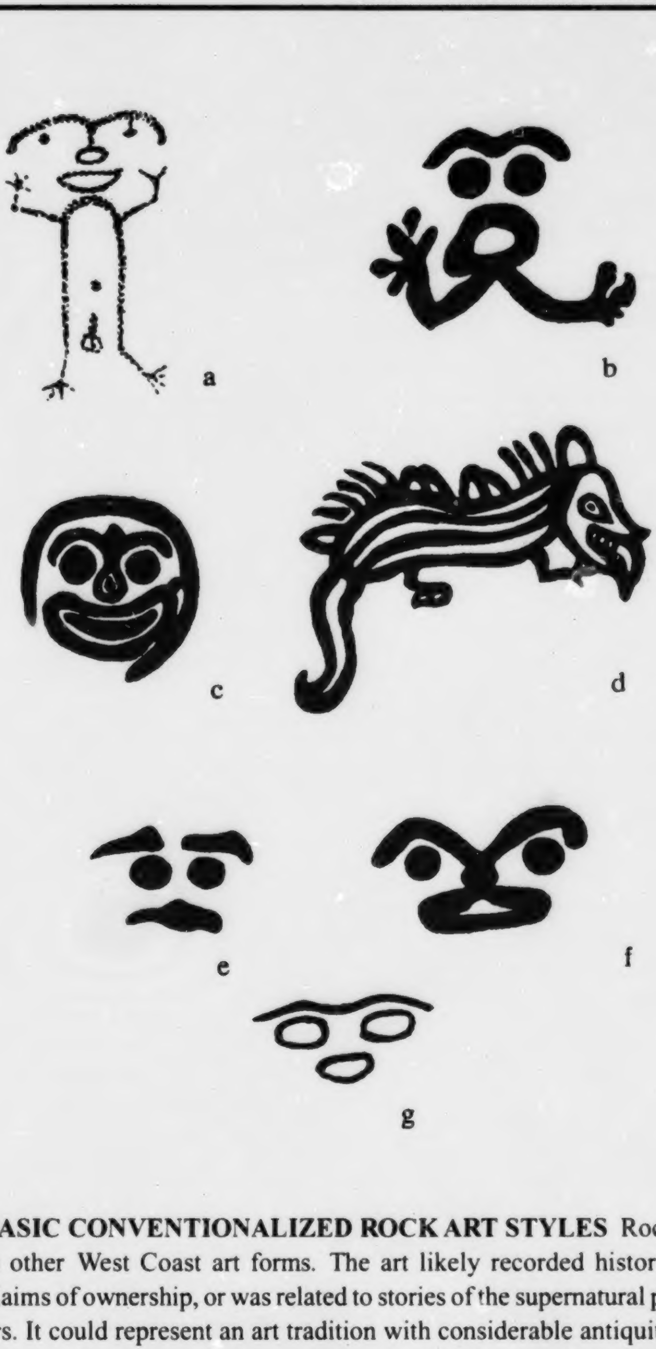


FIGURE 97: BASIC CONVENTIONALIZED ROCK ART STYLES Rock art is simpler and cruder than other West Coast art forms. The art likely recorded historical events and achievements, claims of ownership, or was related to stories of the supernatural powers acquired by clan ancestors. It could represent an art tradition with considerable antiquity although it is currently impossible to date in most instances. (Reproduced with permission from Lundy 1983: Figure 5.1; scale variable)

with a shaman grave or some other ceremonial feature (Fladmark 1986). Such elaborate sculptures occur both in Late Plateau culture and Late West Coast culture. Their frequent manufacture from soapstone, a material found in the Canadian Plateau, and the depiction of rattlesnakes, an animal that did not inhabit the coast, would suggest an interior origin for these striking sculptures. Shared beliefs in guardian spirits, the power of visions, and the ritual acquisition of power in both the Canadian Plateau and the southern coast (Elmendorf 1977), could explain the occurrence of these ritual objects in both regions. Most of the human figures have their mouths open as if they were speaking or singing (Borden 1983: 150). In Marpole complex sculpture "...most of the bowls of animal and human form are assumed to have been used for ritual purposes, holding sacred oil, powder, or water. The seated human figurine bowls, at least, have been associated with girls' puberty rites..." (Duff 1975: 41), a rite related to the veneration of life and, therefore, sacred. This particular interpretation has been challenged by the suggestion the sculptures were tobacco mortars associated with pipes used in curing rituals (Carlson 1983c: 201). The problem with the latter proposal is that many of the seated figures appear to predate the appearance of stone tobacco pipes. All agree, however, that the objects were of ritual significance.

The elaborately carved 1,700 year old Skagit wooden spearthrower depicting a plumed supernatural creature with eyes of inlaid shell or stone bestriding a human head, accidentally found during dredging of the Skagit River in adjacent Washington State, would have had special symbolic significance (Fladmark 1986: 81). In fact, it has been suggested that the item may have functioned more as a ceremonial object than as a weapon per se. A similar observation would apply to the cache of more than 35 elaborate zoomorphic stone clubs found at Hagwilget on the Skeena River (Duff 1975; 1981). The cache was accidentally discovered in 1898 by Chief Johnny Muldoe some 1.2 to 1.5 m below the surface of the ground where it was capped by a large stone. Most of the 'clubs' were either manufactured from material too fragile or in an unsuitable form to have functioned as effective weapons (Duff 1981: 96). It was thus concluded that the clubs pertained to "...some magical or crest concept" (Ibid: 103). Such clubs likely date to Period IV (Fladmark 1986: 70; MacDonald 1983: 101-102). It has been speculated that miniature zoomorphic antler clubs found on the northern coast about 2,000 years ago represented ceremonial weapons used by shamans in their conflicts with witches and other shamans (MacDonald 1983: 111). From the same region, concretions with salmon, killer whale, and mythical water animal motifs, that appear by 1,500 BC and last until AD 1,000, are believed to have performed a ceremonial function related to fish regeneration. The emphasis on segmented backbones, ribs, eyes, and mouths may have given rise to the abstract segmented stones of 500 BC which were common in the Kitselas Canyon of the Skeena River. It has been speculated that the emphasis on skeletal structures, such as the spinal column, relates to the shaman axis of spirit power involved in regeneration and communication (MacDonald 1983: 117). The numerous humanoid bone pendants dating from 1,000 BC into Period V have been interpreted as symbols of the community that the shaman serves (Ibid: 105). Slate mirrors, first appearing in the Kitselas Canyon between 500 BC and AD 500 (Coupland 1988: 240), may have functioned as aids to shaman scrying and meditation or as symbols of status. These objects do not appear to reach the coast of Prince Rupert Harbour until Period V (Matson and Coupland: 1995: 236).

In the Fraser River Canyon area, small, segmented larvae-like bone and stone objects persist from the preceding Period III. It has been ethnographically documented that larvae symbolized an important mythological form believed to be endowed with supernatural powers (Borden 1983: 134). Certainly there can be no more striking example of transformation from one form into another than insect metamorphism. In the same area, stone animal carvings emphasize spinal columns, ribs, and eyes. A muzzled (?) stone bear head may relate to bear ceremonialism (Ibid: 139). The inverted U-symbol and large almond eyes motif on antler spoons of the Locarno Beach complex clearly reflect later West Coast art style forms (Ibid: 141) as does an effigy human skull which may relate to the power of the dead over animals. A unique object from this same complex was a spearthrower hook in the form of a person wearing a cone-shaped hat and a lower lip medial labret. From the 2,000 year old Marpole occupation of the Garrison site on the San Juan Islands of adjacent Washington State, a possible spindle whorl was recovered with the Thunderbird symbol of power incised on it (Carlson 1983c: 200). Locarno Beach complex and Marpole complex art renditions of whale tails and punning, involving human faces incorporated in the whale tail, clearly reflect later West Coast motifs (McMillan and Nelson 1989). This elaborate art in stone, bone, and antler often had a common motif of "...turtlelike animals with prominent eyes, snake or sea monster representations, herons and other birds, and seated emaciated humans" (Mitchell 1990: 345-346). West Coast iconography relates to totemic crests, mythological events and individuals, and in addition to decorative qualities possesses an overriding meaning "...invoking deeper symbols, and was becoming a primary language of thought in the medium of images" (Duff 1983: 47). In this respect, most West Coast art objects "...were symbols of power" (Carlson 1983c: 197-198) related to personal or hereditary encounters ranging from guardian, shaman, secret society, and crest spirit powers. The fluorescence of art objects in stone and bone in the Marpole complex has been attributed to ceremonial elaboration (Burley 1980).

Certain artifacts lacking a specific art dimension may be relevant to belief systems recorded ethnographically. The quartz crystal fish knives of the southern coast, for example, may reflect a belief in the power of the crystal and its use as a token of respect to the soul of the salmon (Fladmark 1986: 68). The rare long slate bayonets and chipped leaf-shaped, stemmed, and lanceolate points, often manufactured from exotic materials and found in burials in the southern coast, may actually represent mortuary status objects rather than utilitarian ones (Burley 1980; Fladmark 1986: 70). Further, the scarcity of some categories of artifacts, such as ear spools, labrets, and spearthrower weights, would suggest that, in addition to their functions as forms of social differentiation, such objects were also imbued with special, probably supernatural meaning. The same observation could be made with reference to the rare native copper items on the northern coast which generally appear in graves (MacDonald 1983: 105).

An exceptional cache from the Boardwalk site in Prince Rupert Harbour is appropriate for inclusion in this section. Sixteen clustered artifacts were found in a pit in the midst of a number of flexed burials but did not itself represent a burial or offerings to a specific grave (for a field photograph of the cache see MacDonald 1983: Figure 6:17). Included in the cache was an elaborate whale bone effigy club (Figure 98), a poorly preserved club manufactured from a killer whale jaw with highly corroded surface engraving, two copper bracelets, six copper-wrapped wooden sticks from 8.5 to 11.5 cm in length, a chipped stone dagger, a poorly preserved goat horn core, a probable stone hand club, a flat red stone 6.5 cm in diameter, and an amber and a wooden bead, presumably the latter preserved by contact with copper salts (Cybulski n.d.). A nearby woman's skull with articulated jaw and a necklace of 260 shell disc beads, was probably associated with the cache as suggested by both its position in the feature and the fact that the right side of the skull and jaw were stained with copper salts; the nearest copper artifacts being in the cache cluster. The skull would have been a 'trophy head'. Based on both stratigraphic location and radiocarbon dates, the cache was likely contemporary with some of the burials and would date around AD 100. It is inferred that the cached objects belonged to a warrior. The wooden rods wrapped with copper, for example, could represent the remains of an arm gauntlet used to protect the forearm when parrying the club blows of an adversary. The meaning underlying this unique cache will never be known. It is significant, however, that it appears to date around the time when the Boardwalk site and other sites in Prince Rupert Harbour were abandoned. It thus may represent a form of votive offering. It is odd that the trophy head was that of a woman. Historical documentation suggests that male heads were taken while women and children were held for ransom, retained, or sold as slaves. At approximately the same time period as the cache, at the nearby Lachane site, a feature containing the headless remains of possibly as many as five individuals was recorded (Cybulski 1996). In three instances, there was clear evidence of decapitation on the neck vertebrae. The bodies all occurred in the same area and rested in unusual body positions suggesting different treatment from that normally accorded the deceased. Another striking feature was the fact that three of the individuals were adult women, two in their 20's and one middle aged. One of the former had her hands behind her back as if bound. The two males were young

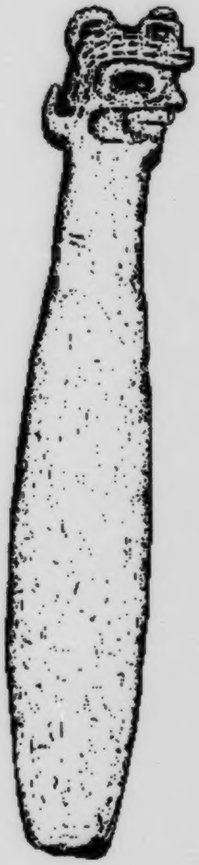


FIGURE 98: HUMAN EFFIGY CLUB OF WHALEBONE
This striking implement was among the items from an unusual cache of mainly warrior paraphernalia from the Boardwalk site in Prince Rupert Harbour. It was encountered during the salvage excavation of the site. (Reproduced from MacDonald and Inglis 1976: Figure 6. Drawing by Mr. David W. Laverie. The club is 43.2 cm in length.)

men. Although a sample of six is small, it is curious that two-thirds of decapitated individuals from the Lachane and Boardwalk sites were women and not male warriors.

A distinctive northern coast trait was the ritualistic removal of human skull vault plaques as well as the modification of other human bones. Evidence of such modification was encountered in the Prince Rupert Harbour area between 1,000 BC and AD 500 (Cybulski 1978). There is ethnohistoric evidence of human skeletal remains being used in rituals such as the Kwakiutl 'Hamatsa', a theatrical cannibalistic ceremony symbolizing death and resurrection (Boas 1891: 617-618). Ritualistic enactment of cannibalism also is recorded among the Tsimshian (Garfield 1939: 313-316) and appears to have been associated with the power attributed to the dead (Cybulski 1978: 27). There is historically documented evidence of human body parts being used in sorcery. The major area of the skeleton to be modified was the skull where the soul was believed to reside (Ibid: 28). In those instances where modified skull and long bones were returned to the burial from which they had been taken, the remains were replaced in their proper anatomical positions. Of the 25 instances of human bone modification from seven sites in the Prince Rupert Harbour area dating to Period IV, there were 12 examples of worked skull, 4 of worked long bones, and 9 cases of bone removal applied to either complete or partial skeletons. Worked skull fragments were predominantly parietals although occipital, frontal, and temporal portions of the skull were also used. Individuals involved were usually adult but there was an instance of a juvenile/child. Skull plaques were apparently removed from the skulls with sandstone saws to judge from the abrasion marks. Both male and female skull plaques are recorded. Of the seven burials with skull modification, where gender and age could be determined, five were adult males with the remaining two being an adult female and a 15 year old. Long bone modification involved grinding the broken ends flat or sometimes cutting and gouging. Such modified human bone appears to have been rare on the southern coast but did occur as indicated by the polished human upper arm bone with transverse cuts found at the Marpole complex Point Grey site (Coupland 1991: 81). Modification of human remains for supernatural purposes has a wide distribution and considerable antiquity across North America.

In addition to the foregoing suggestion of the 'Hamatsa' ceremony on the northern coast during Period IV, other tentative forms of evidence suggest the early appearance of later ceremonies and rituals. On the southern coast, it is speculated that the custom of "...feeding the dead..." was represented by spoons placed near the mouths of burials at Pender Canal as well as shell bowls (Carlson and Hobler 1993: 49). One of these spoons was actually a Period III, 2,000 BC specimen with the sculpture of a rockfish-wolf mask on the handle. Four perforated scallop shells from a Marpole complex burial at the False Narrows site resemble an element of the ethnographically recorded paraphernalia of the Coast Salish sxwayxwey or spirit dance (Burley 1988: 61 and 127). The possibility of ceremonial practices having considerable time depth should come as no surprise to anthropologists who know that religious beliefs and their associated ceremonies are the elements of culture most resistant to change, even under the massive acculturative influences of a dominant foreign culture (e.g. Suttles 1987: 199-208).

Different from the preceding discussion of the use of human body parts were the human remains from the floor of House D of the McNichol Creek site in Prince Rupert Harbour (Coupland et al. 1993: 64). The remains were all teeth, suggesting that they were before death losses and not derived from disturbed burials. As the recollection of the excavator serves, the teeth were all adult and diseased (Gary Coupland, University of Toronto: personal communication). The presence of diseased adult teeth in Iroquoian longhouse pits has been attributed to the fear of witchcraft (Wright and Wright 1993: 6) and a similar situation may have existed on the West Coast where, like the Iroquoian people of the east, hair clipping and nail parings of an individual could be used by a sorcerer to cause the individual's sickness or death (e.g. DeLaguna 1990: 194). It is assumed that a diseased tooth was just as useful to a sorcerer bent of mischief as the hair and nails parings of the intended victim.

Burial mounds on the southern coast likely pertain to Period IV (Fladmark 1982: 120), specifically to the Marpole complex, as would the majority of the cairn burials. The burial mound complex, for the most part restricted to the Strait of Georgia (Smith and Fowke 1901), is poorly understood as most of the mounds have been destroyed by vandals. One mound in the Fraser River Delta measured 7.3 m in diameter, stood 1.5 m high, and covered a burned central area that rested on the original humus layer (Smith and Fowkes 1901: 60). In the Comox Valley of eastern Vancouver Island a mound at the Mission Hill Mounds site dated to AD 1 (Capes 1964: 18). Another mound at the same site contained charred camas bulbs and fern rhizomes, a couple of animal bones, an abrader, and a hexagonal crossectioned ground slate projectile point. The latter item would suggest a Marpole complex authorship for the feature. The mound contained no burials and yet animal bone was preserved. It appears that the stone outlined mounds may, in some instances, represent places of burial and, in other instances, some other form of ceremonial feature such as a commemorative structure. Evidence of considerable burning is also a characteristic of the Comox Valley mounds. At the Tsolum River Mound site there were approximately 30 mounds of circular, ovoid, and semilunar form, standing from .3 m to .9 m in height, with one side of the mound being steeper than the other (Capes 1964: 8). The suggestion that some of these features might represent root baking ovens would seem to be contradicted by sizes ranging up to 15.2 by 7.3 m. What is clear is that a number of the mounds were not places of burial. When radiocarbon or typological dating methods can be applied the mounds all pertain to the Marpole complex.

Stone cairns recorded on the southern coast range from 0.9 to 6.1 m in diameter. Cairns, generally overlooking the sea, frequently covered a burial chamber enclosed by a single row of stones and invariably devoid of grave offerings. The presence of burials with skull deformation suggests that the burial cairns would relate to the Marpole complex or later. In the Cadboro Bay area near Victoria, 'several hundred' boulder cairns were recorded (Smith and Fowke 1901: 58) with some of the boulders involved weighing as much as 230 kg. The Victoria region appears to have been a centre for cairn burial. Local Coast Salish people have no traditions regarding either the burial mounds or the burial cairns. What evidence is available suggests that both mounds and cairn burials pertain to the Marpole complex. This presents a paradox whereby Marpole complex burials in middens are often richly provided with grave offerings in marked contrast to the isolated cairn burials. Also if, as appears to be the case, the burial mounds and burial cairns can be assigned to Period IV and specifically to the Marpole complex (e.g. Mitchell 1971: 54), then this widespread practice in the Strait of Georgia and its shared belief systems that existed for nearly 1,000 years simply disappeared and faded from the memories of the local people.

An interesting feature associated with the burial cairn concentrations are 'empty' or open cairns. Unlike the burial mounds and burial cairns, local natives identified these features as being used in ceremonies (Smith and Fowkes 1901: Figure 3, 68). Given the importance among the Coast Salish people of the vision quest in acquiring a guardian spirit, the open structures may have functioned like the assumed vision pits of portions of the Canadian Shield which they resemble. Since there is still local memory of their use, they would date to Period V but some could also possibly pertain to earlier time periods. The fact that the open cairns, with their oral tradition of ceremonial use, are associated with the burial cairn concentrations indicates that such locales were places of power even if the recollection of cairn burial had totally faded from memory.

On the northern coast flexed bodies placed in wooden burial boxes, with no apparent cemetery clustering, are recorded from 500 BC to AD 500 in the middens (MacDonald 1969: 251). Grave offerings may or may not be present. Offerings consist of amber and shell beads, shell gorgets, stone and bone clubs, ground and flaked daggers, labrets, pendants, and sea otter teeth (Fladmark et al. 1990). In one instance, an adult male had a dog placed over an outstretched arm (Cybulski 1978). Little can be said concerning the burial practices of the central coast as only two bundle burials at the Namu site pertain to Period IV (Luebbers 1978: Table V). Considerable information on burial practices is available from the southern coast. In the Locarno Beach complex occupation of the Montague Harbour site (Mitchell 1971) flexed burials, with or without a covering stone cairn, occurred in the midden. There was also an instance of a cremated bundle burial. Most of the burial information from the Strait of Georgia, however, pertains to the subsequent Marpole complex. Flexed burials, frequently covered with a stone cairn or with a few covering slabs or boulders, reflects earlier Locarno Beach complex practices although grave offerings are more common. The one to three large boulders on top of a body have been interpreted as weights to hold the wooden burial box lid in place or possibly perform some other mortuary function (Burley 1980). At the Whalen Farm site some burials lacked grave offerings (Seymour 1976) while others were richly provided with objects such as an antler human hand and an etched antler haft for a stone biface knife (Duff 1956). The erratic occurrence of grave offerings noted on the northern coast also characterizes the Marpole complex. Burials from the Port Hammond and Eburne

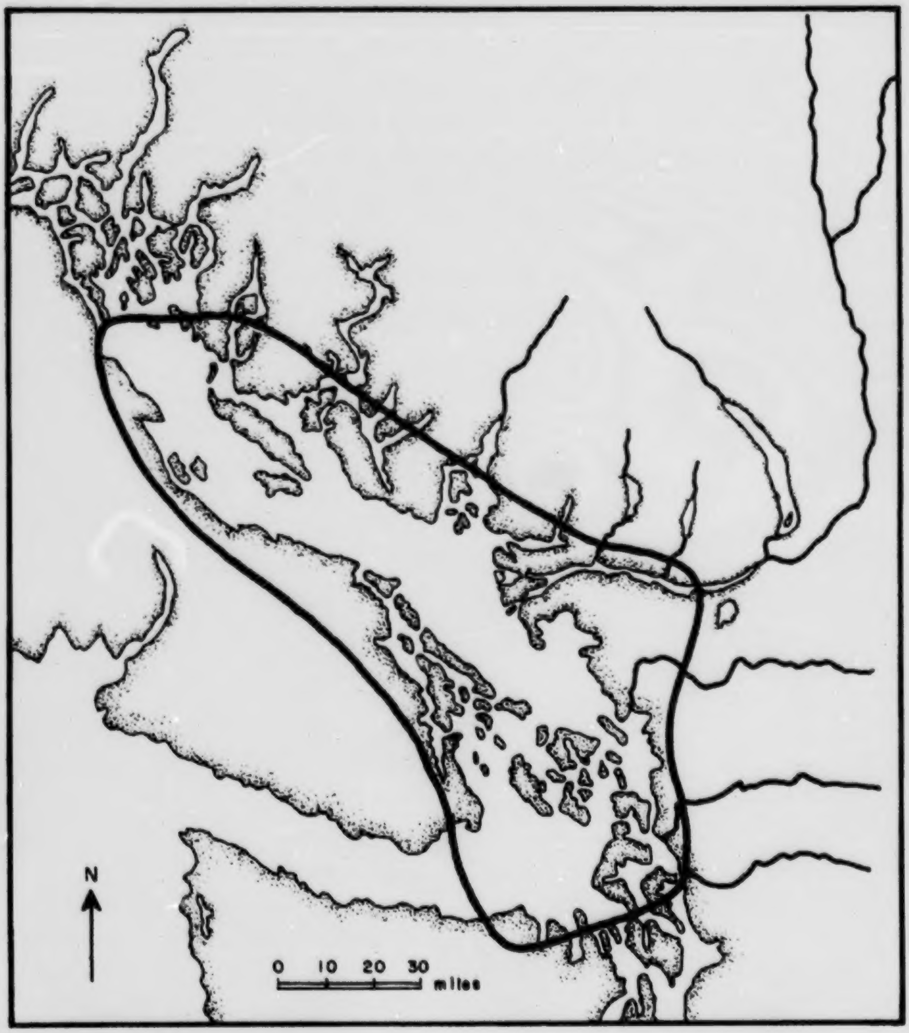


FIGURE 99: DISTRIBUTION OF MOUNDS AND CAIRNS ON THE SOUTHERN COAST These poorly understood features pertain to Late West Coast culture and, specifically, the Marpole complex. Mounds can either represent places of burial or some form of commemorative structures that lack evidence of human remains. Similarly, the stone cairns can cover burials either in middens or isolated cemeteries and burials. (Adapted from Mitchell 1971: Figure 14. Drawing by Mr. David W. Laverie)

sites, for example, appear to have lacked grave offerings. At the Hill site (Hall and Haggarty 1981) there was no pattern of association of offerings with cairn burials as opposed to non-cairn burials. Of the 22 burials eight involved cairns and 12 contained grave offerings. There were no offerings placed with an adult male with skull deformation, a artificial modification believed to identify the elite. At this same site, a labret was associated with an adult male mandible and a ear spool with another skull. Other offerings included numerous shell, shale, and steatite disc beads, chipped and ground projectile points, sandstone saws and abraders. At least three burials involved multiple internments with one of the most richly provided graves containing the remains of an adult male, two adolescents, and an infant. All of the graves were located in a 4 by 5 m block of the site and at the same depth suggesting the existence of a tightly confined cemetery. Grave locations must have been clearly marked at the time of cemetery use. Multiple burials also occurred at the St.Mungo Cannery site where a large pit contained four people (Calvert 1970). At the Glenrose Cannery site a bear burial is mentioned but it is not specified whether it pertained to the Marpole occupation or the earlier St.Mungo occupation (Styles 1976: 203). With reference to the presence of grave offerings or the lack of same, it should be kept in mind that what the archaeologist is recording are only those objects that are capable of surviving the passage of time. Very little burial information is available for the Lower Fraser River region, which is not surprising given the acid soil conditions of the area. At the Katz site near Hope (Von Krogh 1976) partially cremated burials were occasionally associated with rock concentrations and with a few grave offerings.

External relationships:

Late West Coast culture external relationships would have been with Late Plateau culture of the Canadian Plateau in the southern interior and Late Northwest Interior culture in the northern interior, as well as with other cultures to both the north and the south along the Pacific coast. Relationships are represented by either trade objects or evidence of technological transfers. Internal trade within Late West Coast culture is difficult to assess. At the time of European contact, for example, the Haida of the Queen Charlotte Islands traded canoes, wooden chests, sea otter hides, dried herring eggs on kelp, and marine alga (*Porphyra*) to the Nass River Tsimshian in return for eulachon grease (Turner 1974: 7). None of these items survive in the archaeological record. To judge from written documentation, most items traded along the West Coast either do not survive in an archaeological form or are impossible to recognize as trade items, e.g. slaves (Huelsbeck 1988). Animal oils and dried fish were the staple foods and cedar planks and canoes were the staple commodities. Of the 42 items traded on the Skeena River less than half could be expected to survive archaeologically except where acid soils prevailed and then only six items would survive the passage of time (MacDonald et al. 1987: Plate 13). Despite the lack of direct evidence, it can be suspected that regional trade fairs were associated with the seasonal fisheries at major rivers such as the Fraser, Skeena, and Nass and that they were in existence during Period IV and likely earlier just as they were at the time of European contact (Fladmark 1982: 120). The control and redistribution of resources by powerful coastal chiefs and their extended families at these trade fairs or centres would have been a significant factor in the development of the West Coast cultural pattern.

Relationships between Late Plateau culture in the interior and Late West Coast culture on the coast have apparently been both long and close. The culture of the Lower Fraser River region may even represent a composite of cultural traits from both the interior and the coast or an amalgam of both coastal and interior people during the late portion of Period IV. In terms of coast-plateau interaction, the Lower Fraser River region has the greatest variety of stone sculpture in a core area encompassed by the Gulf Islands on the west and the Upper Fraser River on the east. The seated human figure bowls have "...the greatest over-all distribution in the area..." (Duff 1956a: 97) and the presence of rattlesnake motifs on stone bowls from both the Lower Fraser River and Vancouver Island (Fladmark 1986: 77) clearly indicates interior influence if not manufacture. This distribution of sacred objects reflects some form of religious and ceremonial accord between Late Plateau culture and Late West Coast culture in southern British Columbia. Common trade items coming from the Canadian Plateau to the coast were steatite or soapstone objects and semi-precious stone adzes. Strait of Georgia adzes, mainly manufactured from jadeite, nephrite, and serpentine, indicate a close trading relation with people around the Fraser River Canyon (Burley 1980: 23). An earlier suggestion that microblade technology was introduced to the coast from the Plateau (Borden 1962) has been discarded in favour of an early coastal origin for microblades (Mitchell 1968: 14) although the form attributes of many of the microblades strains the technological criteria of a microblade industry. Steatite tobacco pipes of later Canadian Plateau style appear in the Lower Fraser River around the end of Period IV although the ultimate origin of stone pipes was further south where they occur in the Windmiller culture of central California between 3,000 to 500 BC (Jennings 1989: 175). Undoubtedly of great significance was the introduction to Late West Coast culture of the bow and arrow technology from Late Plateau culture just prior to the end of Period IV (Charlton 1980: 56). Initially arrowshafts were tipped with vitreous basalt arrowheads of interior origin but the imported stone tips were rapidly replaced with tips manufactured from local stone and, in particular, bone. While the bow and arrow was introduced to the coast from the Canadian Plateau, the latter area received the composite toggling harpoon from the coast.

On the central coast at the Namu site, interior obsidian from the Chilcotin Plateau and Mt.Edziza, 110 to 220 km and 660 km away, respectively, have been identified (Mitchell and Donald 1988: 340). Similarly, on the northern coast Mt.Edziza obsidian 400 km to the northeast has been recovered. This evidence of trade into the interior would involve relationships with Late Northwest Interior culture. Despite the suggestion that amber was imported to the northern coast from the interior of British Columbia (MacDonald et al. 1987), it is possible that it was also obtained locally (McAlpine and Martin 1969: 31).

Regarding certain widespread coastal technological patterns, it has been observed that during Locarno Beach complex times in the Strait of Georgia correspondences existed with southwestern Alaska as far north as Kachemak Bay and Prince William Sound. The correspondences are in the form of composite flaking tools, chipped slate knives, contracting stemmed chipped projectile points, thick and facetted ground slate points, labrets, cobble mortars, grooved or notched sinkers, lignite objects, bone chisels and wedges, antler foreshafts, etc. (Mitchell 1971: 72-73). Within a broad classification of a Northwest Coast cultural pattern, reaching from around the Columbia River in the south to southwestern Alaska in the north, there are a number of technological similarities. The relationship has even been extended into northeastern Asia relative to the procedures of sawing, grinding, and polishing in the production of stone and bone tools, the use of barbed harpoons with lateral line guards, and ground adzes sawn from nephrite with stone abraders (Carlson 1960: 584; 1983a: 28). Petroglyph art styles could also be added to this list (Lundy 1983: 92). The difficulty has been to assess the nature of the interrelated roles of diffusion and stimulus diffusion as well as determining the direction of diffusion. For example, it has been suggested that the toggling harpoon technology was a northern introduction to the West Coast (Borden 1962: 12) and that the Eskimo-Aleut received the lip labret from the West Coast as well as the ground slate industry (Ibid: 13-14). Labrets occur in the western Aleutians by 1,500 BC and were assumed to have diffused south to the West Coast (Hester 1978: 108-109). On the other hand, the evidence for the early use of labrets at the Blue Jackets Creek site on the Queen Charlotte Islands, in the form of a distinctive pattern of tooth abrasion on individuals assignable to Period III (Severs 1974: 193-197), adds support to the proposition that labrets actually spread from south to north. It has been tentatively proposed that the ground slate industry diffused from south to north (Borden 1962; Dumond 1968) but there does not appear to be a link between the southern Alaskan and West Coast centres of slate grinding (Clark 1980). Matson is likely correct in his suggestion that the early ground slate items from the Eayam site in the Fraser River Canyon were probably intrusive from the upper deposits of the site (Matson 1983: 135) and that if diffusion was involved in the dispersal of the ground slate industry the movement would have been from north to south given the relative ages of the industry in the two regions. Even though it has been generally assumed that the toggling harpoon diffused from Alaska to the West Coast (Hester 1978: 108), toggling harpoons appear in both areas at about the same time and, while serving the same purpose, are quite different from one another in their specific features. Even if stimulus diffusion was involved in the transfer of this element of technology and possibly masked correspondences in specific attributes, the direction of diffusion still cannot be determined at this time. Stimulus diffusion refers to the transfer of technology and other aspects of culture from one group to another whereby the recipient culture accepts the concept but recreates it in a form bearing little similarity to that of the donor culture. It may even be that toggling harpoons were in use as early as Period II (8,000-4,000 BC) along the British Columbia coast as it is difficult to conceive how large marine mammals such as dolphins and sea lions could have been captured on the open sea without such hunting gear. The rare native copper items along the West Coast are generally believed to have originated from the Copper River region of Alaska (Burley 1981) although the copper has not yet been metallurgically finger-printed to source. If the copper did come from the Copper River then it would represent evidence of relationships between West Coast Indians and Pacific Eskimos, an important link for the reciprocal diffusion of technologies between the north and the south. Such trade contacts have a long history and appear as early as Period III at the Namu site in the form of weapon tips manufactured from walrus ivory. Regardless of ambiguities in the direction of spread of certain traits it is a valid observation that "...Southeast Alaska in particular may have also represented a strategic position in the cultural exchange between inhabitants of the Pacific Northwest and the southern coast of Alaska" (Davis 1989: 342).

In adjacent Washington State the archaeology of Puget Sound, as seen in the Biederbost phase (Mattson 1989), appears to be largely unrelated to developments in the Strait of Georgia. Puget Sound cultural developments were influenced, in large part, by the Columbia Plateau. However, "From Marpole time on, certain traits diagnostic of cultural developments in the Fraser Delta seem to have been shared, though perhaps in a marginal sense by components in approximately the northern third of western Washington State" (Kidd 1969: 33). Relationships between British Columbia and the southern coastal states are apparent in Oregon obsidian from geological deposits 640 km to the south being recovered in the Strait of Georgia, particularly during Marpole times (Borden 1970: 109; Burley 1980: 64; McMillan and Claire 1982: 70). Both ear spools and burial mounds have been interpreted as evidence of distant, undoubtedly indirect, influence from the Formative cultures of Middle America (Fladmark 1982: 120). The two traits could have diffused from California but both were relatively short-lived in British Columbia. It is also likely that the distinctive Gulf of Georgia ornaments found in the Locarno Beach complex had their origin in the so-called 'charmstones' of the Early and Middle Horizons of the northern coast of California where they appear between 2,500 and 1,000 BC (Elsasser 1978).

The outer coast of Vancouver Island was the centre of the dentalia shell trade that was present along the entire West Coast of North America. It even penetrated inland as far as Saskatchewan and the Missouri River and as early as 1,500 BC. While *Dentalia pretiosum* ranges from Alaska to Baja California, it was only accessible to native technology at two locations on the west coast ofVancouver Island (Clark 1963: 15). For a description of the ingenious device invented by the Nootka to capture the live dentalia at considerable depth see Drucker (1951: 111-113). Despite this important and highly localized trade there is no evidence from sites like Yuquot of reciprocity in the form of the exotic trade goods that were being received in exchange. It can only be assumed that the goods flowing to the west coast ofVancouver Island as payment for the shells were either perishable or unrecognizable as trade objects in the archaeological record. The common name for dentalia shells is 'Indian Money Tusk' reflecting the use of these particular shells along the coast at time of European contact as a form of currency.

Human biology:

Most information on human biology from both the northern coast and the southern coast pertain to Period IV. There is little information from the central coast. The evidence suggests that local breeding populations on the West Coast were not closed systems and, as a result, there is neither genetic uniformity nor discrete genetic boundaries (Cybulski 1990). For example, "The Kwakiutl, Nootka, and Coast Salish local groups cannot be statistically differentiated into their representative divisions, and this suggests frequent genetic interchange among the local groups of these divisions over some period of time" (Cybulski 1975: 260-261). On the basis of anthropometry, the systematic measurement of the various parts of the human body and particularly the head, it was proposed that there were three possible coastal physical types: Northern (Haida/Nisgha/Tsimshian); Kwakiutl (Kwakiutl/Bella Coola); and, less clear, a Gulf of Georgia type (Boaz 1891). Ignoring the tentative Gulf of Georgia physical type, it was noted that considerable internal variability existed within the first two physical types. Like their descendants, Late West Coast culture people were "...medium stature, short and broad trunks, long and powerfully developed arms, and less strongly developed lower limbs" (Cybulski 1990: 53). In the Prince Rupert Harbour area males averaged 162.5 cm (5'4") in height and females 149.9 cm (4'11").

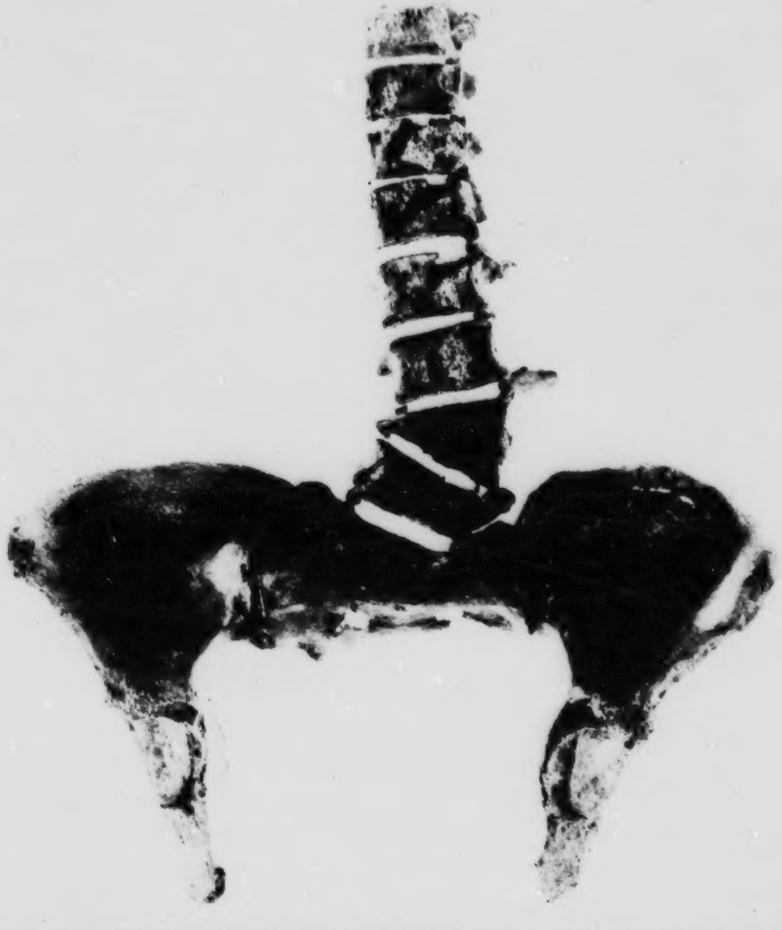
Most human pathologies do not leave a record of their ravages on the bony tissue of the body. A few, however, do. Syphilis (treponemal infection), which was more likely endemic than venereal, has been recorded on both the northern and southern coasts. Cribra orbitalia, a result of iron deficiency anaemia and recognized by porous lesions in the bone of the upper eye socket, had an occurrence of 31.0% in the Strait of Georgia in contrast to 8.0% and 6.4% at the Namu site and the Prince Rupert Harbour sites, respectively. Due to an abrasive low carbohydrate diet, dental cavities are rare but abscesses common (9.2%). In the Prince Rupert Harbour area osteoarthritis was common in adults and bone tumours were present. As a result of increased warfare during Period IV, 40% of the adults from the Prince Rupert Harbour sites and the Namu site exhibited facial, head, limb, and spinal fractures while only 11% of Strait of Georgia adults possessed similar evidence of violent trauma (Cybulski 1990).

In the Locarno Beach complex population of the Crescent Beach site on the southern coast osteoarthritis was usually related to age. Instances of the more serious rheumatoid arthritis in women predominantly affected the hands and feet and eventually the larger joints (Beattie 1976). A severe instance of ankylosing spondylitis, an inflammatory joint disease, was identified in a man. Osteophytosis, bony lipping of the margins of the vertebral body and particularly on the 10th thoracic to the 5th lumbar vertebrae, was endemic. A single instance of a benign bone tumour in a male adult was identified. Trauma in the form of skull wounds, fractured tibia, and vertebral compression fractures were common. Abscesses and caries are also recorded. The relatively old age of the population from the Crescent Beach site accounts for high instances of osteoarthritis, osteophytosis, and dental disease. Strenuous activity is suggested by vertebral collapse and degenerative arthritis. Evidence of iron deficiency disease, however, was absent. A reported instance of trephination has since been identified as a healed head wound (J.S. Cybulski, Canadian Museum of Civilization: personal communication). Trephination was an operation procedure whereby a portion of the skull bone was removed to relieve pressure on the brain resulting from a head blow. Among the 32 individuals from the Marpole complex occupation of the Hill site 14 infants and adolescents reflect a high mortality rate among young individuals (Hall and Haggarty 1981). Tooth loss and alveolar resorption were common dental pathologies. Abrasion on four incisors of the jaw of one of the older adolescents can be attributed to labret use (Ibid: 80). A Marpole complex multiple burial, composed of two young adult couples, two juveniles, two children, one infant and one fetus, at Duke Point revealed that "At least five and possibly seven of the people show extensive pathological changes strongly suggestive of congenital syphilis" (Cybulski 1980: 61). This diagnosis has subsequently been confirmed by X-ray examination (Murray 1982: 365). The population profile of this particular mass grave and the incidence of congenital syphilis together suggest that the individuals perished at the same time, probably in a drowning, and that the two families involved were related. At the False Narrows site the Marpole complex population accounted for approximately 73 individuals of both sexes and all ages. A high birthing death rate is

"A"

"B"

"C"



BLACK AND WHITE PLATE XXXV: LATE WEST COAST CULTURE SKELETAL MODIFICATION AND PATHOLOGY At the top of the photograph **(A)** is a bird's-eye view of the skull of a thirty-some year old male from Prince Rupert Harbour who had a large diamond-shaped plaque sawn from his skull vault after death. The bone plaque was likely used in either ritual or sorcery (Cybulski 1978: 26). Also from the Prince Rupert Harbour area are the following: **(B)** an example of severe arthritis in a man's elbow, wrist, and hand; **(C)** a fractured and partially healed male forearm that likely resulted from the arm being broken in an effort to parry a club blow; and **(D)** a debilitating case of scoliosis or spinal curvature that crippled a young woman from birth. (Photograph of skull with removed plaque courtesy of Jerome S. Cybulski, Canadian Museum of Civilization. Other illustrations reproduced from MacDonald and Inglis 1976: Plate 16 with original photographs provided by Dr. Jerry Cybulski) indicated by the evidence that one half of the women died between the ages of 18 and 30. In one instance a mother and her child had obviously both perished during child birth. The male death profile was more evenly distributed. A low infant mortality incidence in this population probably was a product of differential treatment of deceased infants who were not always buried in the usual cemetery areas. As a rule, bodies were placed in shallow graves in the midden in either extended or flexed positions and usually associated with one or more rock slabs that probably held the lid of the wooden coffin in place. Cairn burials were rare but one covered a woman with Chinook style artificial cranial deformation suggesting inter-tribal marriages that extended as far south as the Columbia River. Multiple burials indicated some grouping of kinsmen through time. This practice of repetitive use of a single grave through time is more likely to account for scattered human bones at the site than any speculated "...above ground disposal..." (Burley 1988: 52).

Two general characteristics of the populations of the Marpole complex in the Strait of Georgia region are an increase in the incidence of cribra orbitalia, which has been interpreted as a product of dietary deficiencies related to resource specialization on salmon (Burley 1980: 71), and the appearance of artificial head deformation of the anteroposterior form. This form of skull deformation was practised by the Coast Salish at the time of European contact and was associated with 'worthy people'.

Inferences on society:

A major theoretical concern regarding Late West Coast culture is when, how, and why the egalitarian societies of previous times, including the initial part of Period IV, were transformed into the ranked societies that characterized the West Coast at the time of European contact (Matson and Coupland 1995). Archaeological evidence is particularly inept when it comes to providing demonstrable insights into changes in human social structure. Despite the limitation, archaeology is sometimes able to detect changes in cultural systems which can then be used as proxy evidence relating to possible changes in social structure. The process is hazardous and the line between 'just-so-stories' and reasonable, testable hypotheses can be very thin. When a number of proxy data sets collectively accommodate a particular hypothesis relating to inferences on social change then the likelihood of the hypothesis having some relationship to what actually happened in the past is increased. In contrast, simple cause and effect scenarios are rarely convincing as most culture change is a multi-dimensional phenomena. Much ingenuity has been directed to this issue of social change on the West Coast. It is an issue that can only be resolved by archaeology. Archaeology, with all of its limitations, still has some control over the time dimension and is not forced to simply accept uncritically as fact the undoubtedly flawed early historical documentation and late, post-disruption ethnographic interpretations of native cultures.

All of the hypothetical proposals regarding changes in social structure possess common elements and are differentiated from one another more by emphasis than opposing explanatory stances. There are a number of assumptions that underlay the transformation of egalitarian societies into ranked societies. Rank is equated with any social inequality accepted within a community as the norm, regardless of its form and intensity. A transitional period must have involved considerable time in order for any family or group of families to amass both the wealth and the supernatural sponsorship needed to coerce the rest of the society into accepting their claims of special privilege. It is assumed that the drift towards a ranked society involved the interplay of a number of social factors which progressively changed through time until society, as a whole, accepted a ranked society, consisting of nobles or worthy families, commoners, and slaves, as a normal and acceptable state. The challenge facing archaeology is to delineate the complex interacting variables which eventually led to ranked societies. All of the various proposals for the development of ranked societies along the West Coast incorporate sedentism and resource control, particularly of salmon, as major factors. It is pertinent that the historically documented more rigid social structure of the northern portion of the coast relative to the southern coast may relate to the fact that in the north resources were more concentrated, making them more easy to control than the more widely distributed resources of the south (Matson 1985: 250). Certainly one of the most fascinating and as yet unexplained aspects of the transformation of egalitarian societies into ranked societies, as judged by the archaeological evidence, is that the process appears to have taken place along the entire coast at approximately the same time. It may be that proprietary rights to certain resources and resource areas during socially egalitarian times was a key factor in permitting certain families to take special advantage of innovations involving the processing of winter food at the expense of their neighbours and to be able to do so with community impunity. Within this entire process of social change it is important to recognize that "In contrast to the highly developed wealth and prestige systems, political structures are weakly developed along the Northwest Coast" (Matson and Coupland 1995: 29). West Coast communities were characterized by a lack of tribal political organization, with little influence being brought to bear outside of the individual multi-family houses. In this respect, the evolution of rank was most definitely a family and family lineage affair and not that of the entire community.

One account of the evolution of ranked societies on the southern coast is premised upon a number of interrelated assumptions (Croes and Hackenberger 1988). It is proposed that prior to 3,000 BC the region had a low population of mainly terrestrial hunters who only practised limited food storage. Between 2,000 and 1,000 BC populations concentrated in specific locales and the heavy reliance upon bottom fish and shellfish populations resulted in a depletion of shellfish. After 1,000 BC an emphasis on the storage of seasonally abundant foods, such as salmon, was imposed by the combination of reduced shellfish availability and increasing population requirements. This was followed by further population growth and intensification of resource exploitation. Intensive exploitation of regionally limited seasonal resources, in conjunction with population growth, led to further reduction of resources and to extended families exerting control over the major resource areas. With control by different families came differences in access to resources leading to differences in wealth and the evolution of ranked societies. The first inkling of ranked societies are to be seen in the Locarno Beach complex by 1,000 BC or shortly before. Others would associate the origins of ranked societies on the southern coast with the establishment of the permanent winter village and improved salmon storage methods beginning as early as 2,000 BC (Matson 1992: Figure 14). Between 400 BC and AD 600, during Marpole complex times, population increase is believed to have forced even greater reliance upon summer-fall resources, with stored salmon becoming the single most important winter food. The essence of this view of the development of ranked societies is the integral relationship between resource procurement-processing and population increase with the first permitting the second and the second forcing new resource procurement and processing procedures in order to maintain itself. In this respect, the food-population model is a self-generating one that once begun could not be stopped. Exponential population growth on the Olympic Peninsula of northwestern Washington State has been speculated to have involved the following increases in population: 2,000 BC = 7,500; 1,000 BC = 22,500; AD 1 = 67,500 (Croes and Hackenberger 1988: 28). Carlson's criticism of the foregoing hypothesis, that too little is known of what happened prior to 3,000 BC to make much comment regarding the genesis of certain changes and that earlier cultures were likely heavily coast adapted rather than predominantly land adapted (Carlson 1989), is well taken but not directly pertinent to the core of the hypothesis if one accepts its self perpetuating nature. It could have taken considerable time for resource exploitation to reach an exponentially critical level where there was no turning back. Also, the view that the formative period of the southern coast was 1,000 years earlier than Locarno Beach with good evidence of "...memorial potlatch, status differentiation, surplus wealth, art and sculpture, and ceremonialism involving spirits and masks" (Ibid: 234) has a number of debatable aspects as they relate to the transition from an egalitarian society to a ranked society.

A somewhat different scenario regarding the evolution of ranked societies has been proposed for the northern coast (Coupland 1988). With reference to the Kitselas Canyon area on the Skeena River it has been suggested that the predictable salmon spawning runs in the area encouraged control of the resource by egalitarian corporate groups from which leaders eventually arose to assert control over the resource and limit access to it by other members of the corporate group. This resulted in an uneven distribution of wealth and the eventual development of a ranked society. Around 1,000 BC the similar size and form of the dwellings of the Paul Mason site is regarded as evidence of an egalitarian society (Coupland 1985) although others would see the village arrangement into two parallel rows as "...evidence of a high degree of organization requiring a social hierarchy" (Carlson 1989: 235). On the other hand, such an arrangement of dwellings could reflect an egalitarian exogamic phratry despite the fact that among the Tsimshian at the time of white contact there were four such phratries (Jenness 1955: 337). A phratry is the grouping of the different clans making up a community into distinct units, each composed of different combinations of clans. Functions of phratries were mainly ceremonial. Along with house size, the lack of wealth differences in house contents at the Paul Mason site favours the interpretation that the village was egalitarian and not ranked. In fact, personal adornments, that could possibly indicate the beginning of some status differentiation, do not appear in the area until around 600 BC (Coupland 1993: 56). It has been suggested that "...social ranking evolves as a process of amplifying rather than counteracting deviation..." (Coupland 1985a: 223-224). Initially, egalitarian corporate groups establish control over local resource(s) but are eventually replaced by internally ranked corporate groups who are not concerned with levelling the impact on the community of resource fluctuation or subsistence needs but rather are interested in controlling surplus production, using the egalitarian labour force to support the elite's sociopolitical aspirations. Contrary to the view that ranked societies arose along the West Coast as regulating mechanisms to equalize the distribution of food, it is suggested that the competitive drive leading to these societies was the acquisition of personal and family prestige through the accumulation and redistribution of wealth in the form of food.

There is general agreement that social ranking had evolved along the West Coast by at least 500 BC (Ames 1981: 801; Burley 1979: 134; 1980: 60; Coupland 1985: 53; MacDonald and Inglis 1981: 52; Matson 1976: 304; 1983: 143; Mitchell 1971: 54). Coupland's reasoning that egalitarian corporate groups were a transitional phase in the formation of ranked societies has much merit as it would be a reasonable mechanism of control by hunters and gatherers and would also have provided the time required to achieve social approval of resource control by specific segments of the society. Such a social mechanism would also accommodate the food-population hypothesis, particularly during the Locarno Beach complex period in the Strait of Georgia. The cultural complexity seen in Marpole complex times around 500 BC could be a product of the intensification of local resource exploitation permitting increasing sedentism and eventually control of resources leading to ranking (Matson 1983). A ranked or complex society is one where established limitations of accessibility to prestige social positions exists whereas in an egalitarian society age and sex graded prestige positions are open to all who aspire to them (Fried 1967: 33).

The association of ranked societies with the Marpole complex of the Strait of Georgia as opposed to the preceding Mayne/St.Mungo/Locarno Beach complexes has been premised, in part, upon evidence from the earlier complexes of a simple mortuary system, lack of evidence of plank houses, absence of large villages, and more broadly based and less specialized economic adaptations (Burley 1979; 1983). Only the last two factors have any real support in the archaeological evidence. It is the interrelationship of a number of conditions which appear to be critical. Ranked societies, sedentism related to resource ownership, and the intensification of salmon procurement and storage are all linked together (Matson 1983: 142). Given the specialization of resource exploitation associated with sedentism and ownership, it has been inferred that trade, the potlatch, and expanding kinship networks would become increasingly important in order to accommodate natural fluctuations in resource availability. This would be a reasonable development as it would represent a form of life insurance for all parties involved. Evidence of population increase and/or concentration during Marpole complex times is seen as supporting the presence of sedentary, ranked societies. Changes in social organization could be expected to coincide with such a settlement pattern change which, in turn, could result in increasing populations and pressure on resources (Matson 1983: 138). The only resource that could sustain such intensification of exploitation was salmon and within this process preservation and storage technologies would actually be of greater importance than the procurement methods (Ibid: 133). And, "Once resources were owned, inequities relating to access and inheritance would occur as well as changes in technology which would affect the relative worth of the resource locations" (Matson 1983: 141). The underlying assumptions are that sedentism, local resource ownership, and the focus on stored salmon as winter food are prerequisites for ranked societies and that these prerequisites did not come together until Marpole complex times (Burley 1983; Matson 1983). To procure and process large quantities of salmon for winter consumption a reorganization of the labour force would have been necessary. This would involve increased centralized authority and the cooperative efforts of extended families rather than nuclear families. The need to create surplus wealth for the prestige fulfilling requirements of leaders and elite families would increase pressure for even greater surpluses, more efficient technological innovations, and an expanding corporate group size through polygamy and slavery (Burley 1980; 1983: 168). Certainly labour intensive activities, such as the construction of the stone fish weir at the Deep Bay site, would suggest the efficient organization of a large group of people but, in this instance, it was done prior to Marpole complex times (Monks 1987: 129). The association of the Deep Bay and the False Narrows sites with fortified sites also suggests that resource claims could be challenged by others and had to be defended. It follows that if there was a egalitarian corporate ownership of local resources transitional to the ranked societies of the Marpole complex then this transitional stage would pertain to the Locarno Beach complex with probable roots in earlier local complexes. The frequent stratigraphic relationship between the Locarno Beach and Marpole complexes at sites could suggest some control of local salmon and other resources as early as Locarno Beach complex times.

A variation on the preceding views on the evolution of ranked societies is the suggestion that such societies arose on both the northern and southern coast sometime around 500 BC "...through the constraining of a resilient system" and "...the most critical constraints involved were subsistence specialization and circumscription; the processes were population growth and promotion" (Ames 1981: 798). Translation of the preceding quotes may be useful to the general reader: resilient = generalized foragers; specialization = salmon + alternative resources; circumscription = territorial constraints; and promotion = elite using ritual symbols to achieve promotion in society. The need to coordinate the seasonal activities required to obtain the winter salmon supply reinforced leadership roles with dominant lineages eventually being supported by their relationship to the supernatural. In this perspective of "...ranking as an information processing system as opposed to a redistributive system" (Ibid: 800) social equilibrium is maintained with increased efficiency to respond to sudden social or environmental changes.

Evidence of inequality between contemporary villages in Prince Rupert Harbour was recently discovered at the McNichol Creek site. Faunal analysis from this late Period IV village indicated that the villagers had been denied access to important animal foods, such as sea mammals and eulachon (Coupland et al. 1993: 71), whereas larger villages in the same area produced evidence of both sea mammal hunting and eulachon fishing (Stewart and Stewart 1996). Faunal composition discontinuities between villages suggest that sites like Boardwalk and Lachane exerted hereditary control over certain resources and denied other villages access to them. The discovery that not all villages in an area were 'born equal' is one of the most compelling lines of evidence for the existence of inequality in access to resources and thus the existence of ranked societies. In this instance, however, the inequality appears to have applied to an entire village and not simply some house lineages. One house at the McNichol Creek site was significantly larger and deeper than the others, measuring 13 by 10 m, and was probably the dwelling of a lineage head or chief (Coupland 1993: 58). A single such house among the 15 dwellings of the McNichol Creek site deviates somewhat from the historically documented Coast Tsimshian custom where "...rights to resources were owned by lineages or "Houses", and Houses were not equally wealthy in terms of ownership" (Coupland et al. 1993: 60).

Evidence of ranking has frequently been based upon the abundance and/or nature of offerings placed with the deceased. The large serrated biface blades and points found in some Marpole complex graves, for example, have been inferred to have been special mortuary offerings that were symbols of status and wealth (Fladmark 1982: 113). The validity of using grave offerings as evidence of rank has been brought into question (Matson 1985: 246). I would agree with the question-answer "Can we use mortuary data to distinguish achieved status from ascribed status with any level of confidence? I am increasingly inclined to think that we cannot" (Coupland 1996: 157). As a case in point, at the False Narrows site, 19 of 73 individuals were regarded on the basis of the grave offerings as being people of status (Burley 1988: Table 7). The nature of the grave offerings, however, were quite variable with shell beads being the only common denominator. If dentalium shell beads did equal wealth at this site, as they did all along the West Coast at the time of European contact, then it could be argued that there were at least nine status individuals who had been buried with 10 or more dentalium shell beads. Pertinent to the debate surrounding the relationship between status and grave offerings is the curious fact that the Period V Greenville site burials on the Nass River involving 57 individuals contained virtually no offerings other than elderberry seeds and the remnants of wooden burial boxes (Cybulski 1992) while offerings occurred with burials in Prince Rupert Harbour immediately to the south between 2,000 BC and AD 500. One would expect richly endowed subadult burials if offerings were indeed related to hereditary status but it is not at all clear that this was the case on the northern coast (Coupland 1993: 68). On the southern coast, abundant grave offerings do occur with Marpole complex individuals ranging in age from infants to adults and has been suggested to reflect ascribed status (Matson and Coupland 1995: Table 7-2). The underlying assumption that subadults would not have achieved status and thus richly endowed graves of children must reflect ascribed status, is not necessarily valid. Offerings were frequently lavished on infants in a number of earlier cultures across North America that were not ranked. Subadults being placed in labour intensive cairn tombs, evidence of infant head binding resulting in cranial deformation, and wealth objects occurring in subadult graves do, however, collectively suggest some form of ascribed status in the Marpole complex.

Artificial head deformation first becomes common during Marpole complex times where it is found in both sexes. Such purposeful modification of head shape has been attributed to rank differentiation (Mitchell 1971). On the other hand, "...the majority of skulls..." pertaining to contact and proto-contact Kwakiutl, Nootka, and Coast Salish were intentionally deformed (Cybulski 1975: 42) which raises the issue of either only status burials were being discovered by late 19th and early 20th century collectors or that skull deformation per se is not a good indicator of status as it was applied to the majority of the population. Under such circumstances, the majority of the population of the communities involved were 'worthy people' with the 'worthless people' and slaves representing minorities. The earliest evidence of head deformation on the southern coast is from the DeRt-2 site on Pender Island at 700 BC (Carlson and Hobler 1993: 37) although the custom appears to have been rarely practised in the Locarno Beach complex. It has been recently suggested that both labrets and head deformation may represent evidence of class structure or be simply "...a group identifier, with no implication of social stratification" (Mitchell 1990: 344). One thing is certain, whatever its significance during Period IV artificial head deformation was ascribed as the deforming head bindings had to be applied at infancy. At the time of European contact in the Strait of Georgia only slaves lacked deformed heads (Barnett 1955).

The scarcity of certain artifacts such as labrets, ear spools, the Gulf of Georgia complex carvings, dentalium beads, native copper objects, and masses of stone and shell disc beads, could suggest that they represent wealth and thus status objects (Fladmark 1986: 76). On the outer coast of Vancouver Island the 500 BC carved whale bone clubs from the Yuquot site are said to resemble the historically documented badges of ranked office (Dewhirst 1980: 341). Some common stylistic patterns of stone, bone, and antler sculpture along the entire coast also suggest the possibility of craft specialization required to provide status objects to chiefs by at least 500 BC. The fluorescence of Marpole complex art has been speculated to relate to art production intended to support social ranking (McMillan and Nelson 1989: 216). Art styles of Period IV increasingly approach later animal crests which were often hereditary family prerogatives symbolizing status. Twelve examples, or 16% of the adult population from the Prince Rupert Harbour sites, possessed faceted anterior mandibular tooth wear indicative of labret use by only a select portion of the population. The gender labret use was 10 male to 2 female (Cybulski 1974: 33-34). On the same basis of distinctive tooth wear, labret use was in evidence for both sexes in the Locarno Beach complex and in an instance from Pender Island is as old as 2,000 BC. Labret use on the southern coast disappeared around 2,000 years ago when head deformation became common (Matson and Coupland 1995: 214). From the Hoko River wet site on the Olympic Peninsula of northwestern Washington State distinctive knob-topped cedar hats dating to 1,000 BC are stated to be similar to ethnographic hats associated with rank (Croes and Hackenberger 1988).

Conflict on the West Coast is inferred from stone and bone clubs, wooden, bone, and copper plate armour, head and arm wounds, and burials with projectile points in the abdominal cavity. At the time of white contact warfare was practised to enhance chiefly status, seek revenge for past wrongs, to acquire slaves and loot, or to assert control over a trade route. Increasing evidence of warfare would naturally be concomitant with developing ranked societies, wealth control, and population increase (Fladmark 1986:

83). Of all the human bone fractures recorded from the Prince Rupert Harbour area approximately 60% can be attributed to violence, presumably as a result of warfare. These included skull and facial fractures resulting from club blows and forearm and hand fractures stemming from parrying injuries and disarming blows during club duels (Cybulski 1990). At the Lachane site a multiple burial, dated to AD 250, contained three decapitated bodies, two male and one female, with cut marks on the neck vertebrae, and two other likely associated headless female bodies; one of which appears to have had her hands bound behind the back (Cybulski: 1996). The foregoing clearly suggests the taking of heads as war trophies. The male/female burial ratio of 1.9:1.0 from the same area has been interpreted as evidence that female slaves, presumed to make up a considerable portion of the population, were not being buried with the elite population. This possibility is reinforced by the clustered location of burials associated with probable inherited traits such as brachymetapody and posterior atlas bridging suggesting the possibility of specific family lineage burial plots (Cybulski 1988). Conversely, in the Strait of Georgia a more normal gender ratio of 1.2:1.0 male to female occurs along with little evidence of warfare. When Europeans first arrived on the West coast slavery was an important economic factor (Mitchell and Donald 1988: 313) and, to judge from the northern coast evidence, was in place at least by Period IV. It has been speculated that as early as 500 BC in the Prince Rupert Harbour region cross-cousin marriage may have existed which would have placed young men under the authority of older men who, along with fathers-in-laws and maternal uncles, would have constituted a coercive extended family group capable of directing internal hostilities outward in the form of inter-tribal warfare (Coupland 1988a: 238-239). In this respect, warfare and coercive force were the products of the social inequality that resulted from ownership of resources, particularly salmon.

The "...ownership of resources which underlies status inequalities" (Coupland 1991: 73) should be seen as a developmental process that was likely rooted to some degree in family/group ownership of resources from earliest times. Given the probability of family ownership rights to certain resources, even in earlier egalitarian societies, technological innovations relating to the salmon capture-preservation-storage complex would favour some 'owners' more than others leading to a disproportionate ownership of surplus food that, as wealth, led eventually to established ranking systems. This social restructuring intensification process was likely self perpetuating leading to concentrated populations, increased social change, and an ever-increasing need for surplus wealth. As year-round social intensification, as opposed to seasonal, would have been more efficient for the maintenance of ranked societies a combination of the late summer-fall salmon fishery and a late winter-early summer herring fishery would permit year-round village occupation and "...the maintenance of intensification of resource production" (Coupland 1991: 91). With reference to the stimulus behind the development of ranked societies, the situation along the coast appears to have been similar to what took place in two areas of Ontario during approximately the same time period. As outlined in chapters 23 and 25 considering Late Great Lakes-St. Lawrence culture and Late Western Shield culture, respectively, it appears that in the Rice Lake area of Southern Ontario and the Rainy River area of Northern Ontario and adjacent Minnesota certain family lineages with hypothesized proprietary rights to wild rice beds were suddenly able to amass wealth in the form of surplus dried wild rice as a storage food but *only when the technology for the effective harvesting and parching of the rice had been developed.* Local elites, with their elaborate burial mound mortuary system in the Rice Lake area, disappeared around the end of Period IV with the appearance of horticulture that would have effectively countered any 'surplus wealth' advantage provided by ownership of the wild rice beds. In Northern Ontario, on the other hand, the local elite families maintained their rights throughout most of the following Period V. It is suggested here that surplus food is wealth and when technological innovation permits the greatly enhanced exploitation of formerly minor resource areas those lineages with proprietary rights to the resource during egalitarian times, whether it be salmon or wild rice, will strive to establish themselves as elites in their communities. Similarly, in Late West Coast culture "Once units smaller than the whole community controlled resource locations, either differences in the values of each resource patch or changes in benefits resulting from technological developments would result in de facto inequality between the groups" (Matson and Coupland 1995: 152).

There are essentially two competing models regarding the development of ranked societies. One, whereby logistical organization and the need to relieve social stress was best met by a social structure incorporating elite resource managers (Ames 1981). Another, whereby self-serving elites, concerned with amassing wealth and labour for their own benefit, used force and coercion to achieve their ends (Coupland 1985; 1988a). It is most likely that the processes resulting in ranked societies involved elements of both of the preceding in the sense that it was both self-serving and system-serving (Coupland 1993: 69). The important point is that the archaeological evidence suggests that "...there is little doubt that by the middle of the Marpole phase (circa 2000 BP) the Developed Northwest Coast Pattern of winter villages with large planked houses, dependence on stored fish, usually salmon, abundant sophisticated art, and ascribed status as well as seasonal moves to specialized resource procurement locations had evolved" (Matson and Coupland 1995: 224) and "...there is good reason to believe that similar achievements occurred elsewhere on the Northwest Coast during the same time period" (Ibid: 225).

It is important to recognize that West Coast ranked societies cannot be equated with any European concept of a few elite rulers who held sway over a larger group of nobles who, in turn, stood above a mass of serfs and slaves. Social stratification in Coast Salish society, for example, was the reverse of the foregoing pyramidal structure with a progressively decreasing number of individuals as one moved from a 'high class' to a 'low class' to 'slaves' (Suttles 1987: 17). Indeed, the nature of ranked societies along the West Coast at the time of European contact was quite variable as was the relative importance of slavery.

Limitations in the evidence:

From earliest times human settlement has concentrated in the sheltered sounds, harbours, and deltas. Recent harbour development, as in Prince Rupert Harbour, and city expansion in deltas, such as the city of Vancouver in the Fraser River Delta, have destroyed innumerable sites. Site destruction along the coast has been particularly damaging as many sites contain evidence of 4,000 or more years of occupation. Archaeological excavation in terms of both pure research and archaeological salvage projects have naturally been heavily focused on the southern coast where the major universities and museums are situated and where urban and industrial expansion has been most intense. Even here there are serious gaps in knowledge, such the limited research between the Fraser Canyon and Fraser River Delta. This has resulted in a somewhat uneven archaeological coverage of the West Coast with more evidence from the southern coast than from the central and northern coasts. The situation will significantly change with the detailed reporting on the more than 10,000 year sequence at the Namu site on the central coast and the large Prince Rupert Harbour salvage excavations on the northern coast. Writing the present Chapter has been complicated by a scarcity of published descriptive reports; a recognized problem (Abbott 1986: 187). In some reports more than 25% of the references consist of unpublished theses, archaeological salvage reports, and papers presented at meetings (Burley 1980). There has also been a more regional and particularist approach to archaeology than is found in many other areas; a trait that is understandable given the regional variability of archaeological complexes along the coast but still a trait that can be responsible for a certain degree of local tunnel-vision. There are problems with archaeological visibility but these have not been nearly as severe as in previous time periods as the land/sea interface was relatively stable by Period IV. Still, natural processes such as the expanding Fraser River Delta which has been moving 300 m westward with each century (Borden 1970: 97), have complicated attempts to locate sites by reconstructing the physical environment for any particular time period. In the southern portion of the Strait of Georgia pre-250 BC sites are extensively eroded by rising sea levels and only the elevated remnants of sites survive (Carlson and Hobler 1993: 36). Similarly, in Prince Rupert Harbour most early sites are likely under a metre of water (Clague et al. 1982) while contemporary sites on the Queen Charlotte Islands, immediately to the west, are situated on elevated marine strandlines (Fladmark 1982). Primarily due to isostatic reaction to deglaciation but also involving eustatic and tectonic forces, the record of sea-level fluctuations along the British Columbia coast has been extremely complex. The major contrast exists between what happened along the mainland and east side of Vancouver Island relative to the Queen Charlotte Islands and the outer coast of Vancouver Island (Clague et al. 1982). It has been noted that due to the effects of river channel change and flooding on the central coast "...only half of the known mid-nineteenth century village sites in the Bella Coola Valley remained visible in the 1980's. At the same site loss rate, half per century, over the last 5,000 years it is understandable why older sites are not commonly found in these valleys" (Hobler 1990: 304). The usual lack of bone preservation due to acid soils at major inland canyon areas, such as the Fraser Canyon and the Kitselas Canyon, has seriously inhibited comparisons with contemporary coastal occupations.

A common method of archaeological interpretation is called 'ethnographic analogy' whereby aspects of the archaeological record are interpreted by extrapolating information from late 19th and early 20th century documents and ethnographic studies. There has been a tendency to over-use or even abuse this method. Sometimes a single correspondence between the archaeology and the ethnography is equated with the entire West Coast cultural pattern. The influence of earlier ethnographic and, in particular, linguistic based explanations of West Coast cultural distributions has been persistent in terms of such matters as the trait list approach, assumptions of limited time depth, and the treatment of West Coast culture as an anomaly (see Fladmark 1975: 263-265). This ethnographic/linguistic bias in archaeological interpretation is understandable given the rich ethnographic and linguistic record but is now frequently treated with more circumspection than in the past. An important fact that appears to have been largely overlooked in the application of ethnographic documentation to archaeological evidence is that most ethnographic work was carried out between the turn of the century and the first half of the 20th century, long after the massive epidemics of the first half of the 19th century had reduced native populations 'by over 80 percent' (Boyd 1990). The population estimate at the time of initial European contact, beginning in AD 1774, is 200,000. Devastating loss of life to epidemic diseases like small pox, affecting mainly the very young and the aged, would have required drastic cultural adjustments, particularly to social structure. In this respect, some aspects of the ethnographic record undoubtedly represent recent cultural abberations that were the products of shattered societies attempting to restore some form of social equilibrium in a desperate effort to compensate for the massive loss of life. The fact that archaeological evidence frequently deviates from the situation recorded by Europeans may simply be a reflection of the above situation. For example, the late Period IV dwellings at the McNichol Creek site are considerably smaller than later descriptions of Tsimshian houses raising the caution that the historic documentation in this area "...may not provide an appropriate analogue for understanding prehistoric household organization in the area before 1500 BP" (Coupland 1993: 58).

A particularly perverse problem and one that characterizes archaeology across Canada is the indiscriminate use of radiocarbon dates even when they are in obvious contradiction with the stratigraphic record. It is rare that scholars note such discrepancies (Burley 1980: 31). Another limitation in the evidence pertaining to Late West Coast culture can be attributed to the nature of shell midden sites. It has been extremely difficult to carry out large village settlement pattern studies on such sites. The combination of disturbance resulting from continuous occupation and the great depth of the middens have conspired to make the richest sites along the West Coast also the most difficult ones from which to extract certain bodies of evidence such as house floor plans and evidence of village planning. Single component assemblages adequate for comparative purposes are a scarce commodity (Burley 1980: 12-13).

The preceding said, it must be noted that some of the most innovative archaeological method and theory to be found in Canada has been applied to West Coast archaeological materials. Both the nature of the archaeological record and the rich ethnographic documentation located in an unusually complex ecological setting have provided an exceptional archaeological laboratory for testing certain anthropological assumptions regarding cultural development and change. In this regard, West Coast archaeology has probably done better than most other parts of the country in adhering to its anthropological roots.

CHAPTER 29

LATE NORTHWEST INTERIOR CULTURE

Précis:

It could be taken as the height of audacity to even suggest the existence of a single archaeological cultural construct for an area that extends from Alaska to Hudson Bay on the east-west axis and, on the opposite axis, from the mainland coast of the Arctic Ocean to the northerly reaches of all of the western provinces from British Columbia to Manitoba. Indeed, it has been observed that "...there is no single viable construct that encompasses all of northern Athapaskan prehistory although during the last two decades there has been major research pertinent to the ancestry of various Athapaskan groups" (Clark and Morlan 1982: 89). The foregoing observation, however, appears to have been influenced by a belief that the discipline of linguistics can approximate the time and nature of dialect divergence; a capability with which I am not as sanguine. Unlike further south, the enormous land mass of the western Subarctic has many common characteristics and, in this respect, is like the lands immediately to the north and east that are still occupied by the Inuit and northern Algonquian-speakers, respectively. Using the Mackenzie River Valley as a dividing line between east and west, the following vegetation provinces pertain: to the east, Tundra and Lichen Woodland with a corner of Boreal Forest in the southwest; and to the west, the aforementioned vegetation provinces but with a marked expansion of the Boreal Forest and even a section of the Columbia-Montane Forest in the southern reaches (McAndrews et al. 1987: Plate 4). Boundaries between the various vegetation provinces fluctuated through time. For example, in the eastern region the present transitional zone between the Lichen Woodland and Tundra would have been in the forest during the warmer climate of Period IV (Gordon 1996: 26). Physiography east of a north-south line bisecting Great Bear Lake, Great Slave Lake, and Lake Athabaska is relatively low lying Canadian Shield with innumerable lakes and rivers, exposed acid rock like granite, and glacial outwash features including numerous eskers. Immediately west of this line is dominated by the Mackenzie River drainage that passes through a series of plains. Further west in the Cordillera proper, the region is characterized by mountains, highlands, and plateaus. In the west the major rivers are the Yukon and the western tributaries of the Mackenzie River. East of the

Mackenzie River Valley are numerous lakes, including very large bodies of water like Great Bear, Great Slave, and Athabasca, and portions of rivers including the Peace, Athabasca, Slave, Coppermine, Thelon, and Dubawnt. For a brief summary of Subarctic environments see Gardner (1981) and for a description of the barrengrounds see Gordon (1996: 6-10). In the western Subarctic caribou and fish were the most important food resources with some bison and deer along the southwestern margin (Gillespie 1981; Heidenreich and Wright 1987) reflecting the fact that the entire region was dominated by two major ecological regions, Arctic and Boreal, albeit each with considerable internal variability (McAndrews and Manville 1987: Plate 17). Another common characteristic of this enormous area is that it is occupied by people who speak Athapaskan languages. Archaeological evidence suggests that the ancestors of these people, particularly to the west, occupied the region for many thousands of years. This opinion is supported by the concentration of mutually incomprehensible Northern Athapaskan languages in Alaska, the Yukon and Mackenzie Valley, and northern British Columbia (Krauss and Golla 1981). East of the Mackenzie River Valley, an Athapaskan association with the archaeological record has not been identified until around 700 BC from whence it continues up to the present. It has only been in the latter half of the 19th century and the early 20th century that the traditional way of life of the people of the western Subarctic was seriously disrupted by European contacts. An excellent early account of life on the barrengrounds can be found in Hearne (1958) and the writings of other early observers. Readers can acquire an fuller appreciation of Subarctic Athapaskan culture by consulting the appropriate chapters in the Subarctic Volume 6 of the Handbook of the North American Indians (Helm 1981). Useful summaries can also be found in Jenness (1955) and McMillan (1988).

In what is admittedly a gross generalization, the archaeology of the entire region during Period IV (1,000 BC-AD 500) has been divided into western and eastern complexes with the Mackenzie River Valley acting as an intervening and poorly understood buffer between the two. It could be that "...the western District of Mackenzie may be intergradational between the Yukon and the central District of Mackenzie (cf. Morrison 1984)" (Clark 1987: 188). The complexes are the Taye Lake complex to the west and the Taltheilei complex to the east. In this instance, the catch-all classification "complex" is used to reflect the uncertainty of the relationship between Taye Lake and Taltheilei. Taye Lake has the greatest time depth, extending well into Period III (4,000-1,000 BC) and likely earlier, while the Taltheilei complex was the product of an exceptional eastward movement of people, likely coming out of northeastern British Columbia and the adjacent Yukon Territory via the Peace River and the Liard River, both major tributaries of the Mackenzie River. This population movement extended 1,500 km east of the Mackenzie River nearly to Hudson Bay, north to the coast of the Arctic Ocean and south into the northern reaches of the Alberta, Saskatchewan, and

Manitoba. Despite the exceptional geographic magnitude of the migration it has, for unknown reasons, not attracted the attention of many scholars. Perhaps as an event that took place in the barrengrounds and northern forests it has been too isolated from southern considerations and lacked the romance of the Arctic. Appearing in the barrengrounds of Keewatin District around 700 BC during a warming climate, the Taltheilei complex's most intensive occupation of these territories, formally occupied by Early Palaeo-Eskimo culture, appears to have occurred toward the end of Period IV (Gordon 1996).

Both the Taye Lake and Taltheilei complexes have regional facies and, while they share a number of traits, there are differences between the two. In one sense, it might have been more appropriate to regard the two complexes as cultural traditions which bifurcated from one another early in Period IV. A detailed consideration of the relationship between the two complexes is severely inhibited by the lack of archaeological information from both northern British Columbia and the Mackenzie River Valley. For the purposes of this exercise, the two complexes are used as gross archaeological constructs that have some internal coherence but whose relationship to one another as component parts of a Late Northwest Interior culture is not yet demonstrable. In a number of respects, Late Interior Northwest culture, as was the case with Late West Coast culture, can best be compared to a fabric whereby the vertical warps or local technological traditions are held together by the horizontal wefts of widely shared tool styles and other traits. The fabric of Late Northwest Interior culture, however, is even more shredded than that of the Pacific coast. Part of the problem facing archaeologists is that the technology of Late Northwest Interior culture would have been dominated by objects made from wood, bark, hide, sinew, and other perishable objects (see Rogers and Smith 1981). Even bone rarely survives the acid soils that characterize much of the region, especially in the Canadian Shield. Many of the tool categories traditionally used to reconstruct culture history, such as microblades and notched points, have what can only be called a whimsical distribution in both time and space in northwestern North America. A recent approach that holds promise for clarifying aspects of the culture history is the detailed study of stone reduction processes to produce expedient flake tools and tool blanks. These studies include consideration of such attributes as the varieties of platform preparation and angles of flake detachment (Gotthardt 1990; LeBlanc 1984). In truth, the simple stone flake was undoubtedly the most important implement in the Northwest Interior culture tool kit. Stone core forms and methods of flake detachment would have been deeply engrained culturally learned behaviour and may well, in the long run, prove to be more informative than the finished tools that archaeologists have relied upon to reconstruct culture history. Innovative methods of analyses are certainly required if the situation whereby "...seldom have so many looked so hard to find so little" (Workman 1983: 87) is to be remedied.

BLACK AND WHITE PLATE XXXVI: SUBARCTIC ARCHAEOLOGICAL VISIBILITY This camp on Great Slave Lake in 1913 illustrates how little evidence of its presence would remain with the passage of time. Even the stone tent flap weights, used most often by archaeologists to identify the former presence of a dwelling, are absent. Bark canoes, not shown in the photograph, disappear without a trace. Like their Subarctic Algonquian-speaking neighbours to the east and southeast, most of the possessions necessary for survival in this harsh land were manufactured from perishable objects such as hides, bark, sinew, and wood. (Photograph by J.A. Mason, Canadian Museum of Civilization negative 26058).

The Taye Lake complex is often assigned to the Northern Archaic, a cultural construct that is being increasingly rejected or qualified as its hypothetical underpinnings cannot accommodate the evidence (Clark 1992: 79; Morrison 1987; Wright 1995: 386). Assigned to the Taye Lake complex in this work are the Old Chief Creek phase of the northern Yukon and the Taye Lake phase of the southern Yukon. This is not an original proposal (Greer and LeBlanc 1983: 33). The Old Chief Creek phase is believed to lead to Kutchin Athapascans and the Taye Lake phase of the southwestern Yukon to relate to the Tutchone Athapaskans. Dated between 1,000 BC and AD 700, the closest relationship of the Old Chief Creek phase is seen to be with the Taye Lake phase (LeBlanc 1984: 437). Shared traits are lanceolate points, large biface knives, scraper forms, chithos, rare wedges and cobble spalls, and an absence of microblades. Flake burins, present in the south, however, are absent in the north. Similarly, the Callison site in northern British Columbia is equated with the Taye Lake complex (MacNeish 1960: 1; Workman 1978: 417) along with the MacKenzie complex of Fishermans Lake in the southwestern Northwest Territories (Millar 1968). Shared traits are lanceolate points, flake burins, and scraper forms including notched varieties.

Although the term 'Taltheilei' was introduced by MacNeish (1951), the complex was first defined by Noble (1971; 1981) on the basis of a series of assemblages recovered from elevated strandlines at the east end of Great Slave Lake. Noble's Taltheilei Shale tradition was composed of a number of early to late phases that terminated with the historically documented Yellowknife Athapaskans although the Chipewyan and Dogrib Indians and possibly other groups were undoubtedly involved in the same complex. For Period IV this sequence of phases included Hennessey to Taltheilei to Windy Point. Paradoxically, due in large part to the funnelling effect of caribou migration routes and repetitively used river-lake crossings on human settlement, sites in the barrengrounds have tended to produce larger numbers of implements than their western contemporaries. Large stratified sites are not uncommon and, thus, in many respects, the nature of Taltheilei complex technology is better known (e.g. Gordon 1996) than that of the Taye Lake complex.

Caribou were of critical importance to Late Northwest Interior culture, not only for meat but also for hides, sinew, bone, and antler. While fish were of great importance, particularly in the fall and early winter as winter storage food, dog food, and a resource of last resort, without the caribou there would have been no people. The same comment could be made relative to fish as it was the combination of caribou and fish that were essential to survival. Other foods were, for the most part, supplementary to these two primary foods. Winter food was particularly important in a land of short summers with 24 hours of daylight and winters with 6 daylight hours and frequent food shortages. Caribou even appear to have influenced human birth in the east where "...four out of five births in February, March and April in the winter-range forest - nine months after massed herds were intercepted at tundra water crossings, nine months after nutritionally fit caribou provided adequate fat to allow Dene women to conceive" (Gordon 1996: iii). East of a line cutting through Great Bear and Great Slave lakes and Lake Athabasca are a number of discrete herds of barrenground caribou (*Rangifer tarandus groenlandicus*) while to the west and south of this range woodland caribou (*Rangifer tarandus caribou*) prevail except in the northern Yukon and adjacent Alaska where another barrenground or tundra subspecies is represented (*Rangifer tarandus granti*) (Banfield 1961: Figures 5 and 6). The major herds making up the eastern barrenground caribou have specific calving areas to the north of their wintering ranges and definite migration routes between the two and thus there is a correlation between traditional caribou river and lake crossings and past human occupations. As a general observation it can be stated that the majority of site locations are either directly related to caribou or fish or both, albeit with seasonal emphases. High mobility during the warm weather and more sedentary settlement during the winter would have characterized the settlement patterns of all of the region under consideration.

There is very little archaeological evidence that can be related to either cosmology or human biology. Early historically documented treatment of the deceased usually involved surface burial whereby little can be expected to survive. European observers who commented on the apparent absence of religious ceremony among various northern Athapascan people undoubtedly did not appreciate the importance of personal power, spirit helpers, and the complex and all important relationship between humans and animals. Nor would they have been aware of the importance of dreams to influence behaviour. Shamans, people with exceptional powers who could act as emissaries between individuals and the supernatural world, represented one of the few instances where assistance, beyond personal power and adherence to taboos, could be sought.

Relationships with their neighbours at the time of European contact involved hostilities with the Inuit to the north and the Cree to the southeast. In Period IV, cultural distributions were the same in the western region as during Period V but to the east a major cultural replacement took place. When the Taltheilei complex spread eastward throughout the enormous territory it would eventually occupy it replaced Early Palaeo-Eskimo culture. It is not yet clear whether this replacement involving filling a void left by contracting Palaeo-Eskimos or if the latter were pushed-out. The time gap between the latest Palaeo-Eskimos in the barrengrounds and the appearance of the earliest Taltheilei complex hunters is narrow. As is clearly demonstrated by the archaeological record, both cultures occupied the same sites and for the same reasons - caribou. There are no compelling reasons, such as climate change, to explain why the Palaeo-Eskimos would be inclined to voluntarily abandon rich hunting territories that they had been exploiting since 1,500 BC. Caribou had not altered their habits as indicated by the fact that all cultures on the barrengrounds, from earliest to latest times, occupied the same sites. It is speculated that east of the Mackenzie River Valley much of the territories occupied by the Taltheilei complex involved the displacement of what were likely seasonally resident Palaeo-Eskimos. Similarly, Early Palaeo-Eskimos disappeared from the northern regions of Alaska, the Yukon, and the northwestern area of the District of Mackenzie. Direct evidence of hostilities can rarely be recognized in the archaeological record and given the kind of relatively small, hit-and-run warfare documented by Europeans for the region, little such evidence could be expected. What is clear from the archaeological record (e.g. Gordon 1996: Figure 8.1 versus Figure 5.1; McGhee 1987:

Plate 11) is that Late Northwest Interior culture, as represented by the Taltheilei complex in the east and presumably the Taye Lake complex and/or related complexes in the west, replaced Palaeo-Eskimo culture throughout much of its former range in the northern reaches of the western Subarctic and adjacent barrengrounds.

Late Northwest Interior culture societies, like that of their descendants in Period V, would have been composed of a number of families grouped into regional bands and, of secondary importance, band groupings that constituted a loose tribal structure. Within these egalitarian societies considerable flexibility of individual choice would have existed. The importance of the highly mobile, small family unit is clearly evident from the generally meagre archaeological remains. Polygyny was wide spread at the time of European contact although few men could have afforded to support more than one wife. The nature of the archaeological record is such that it is likely impossible to determine how old or prevalent this practice was.

Cultural origins and descendants:

Late Northwest Interior culture evolved out of the Middle Northwest Interior culture of Period III and its descendants would become the Athapaskan-speaking peoples of the western Subarctic. As a generality, most archaeologists would likely agree with the foregoing statement but there are, however, a number of nuances to the scenario. For example, "Seemingly, proto-Athapaskan-speaking groups, located primarily west of the Mackenzie River, developed local cultures out of a Denali-Northwest Microblade tradition base. About 500 B.C. one of these cultures -- an actual people -- expanded far to the eastward in the District of Mackenzie and Keewatin as well as northern Saskatchewan and Manitoba, at the same time diverging further. The date of 500 B.C. is close to that estimated by linguists for the earliest cleavage or divergence between any of the extant Athapascan dialects" (Clark 1975: 60). And, "The ancestral lineage of subarctic Indians, particularly Athapaskan, appears many-stranded. Likely candidates are: the Kavik horizon, Klo-kut, Taltheilei Shale Complex, and possibly an extended Taye Lake Complex" (Maxwell 1980: 181). The term 'Denali-Northwest Microblade' is equated in this work with Middle Northwest Interior culture (Wright 1995) and the 'Kavik horizon and Klo-kut' pertain to Period V.

West of the Mackenzie River the Taye Lake complex of the southern Yukon was originally equated with an intrusive Northern Archaic tradition with ultimate, albeit circuitous, origins in the northern Plains. It was further argued that the resulting Taye Lake complex would eventually give rise to Athapaskan peoples (Workman 1978). In this respect, "...the basic elements in the Taye Lake assemblage were imported rather than inherited from the antecedent Little Arm phase" (Ibid: 382). This early proposition is increasingly being rejected or questioned (Clark 1992: 95; Clark and Morlan 1982: 36; Morrison 1987: 67) although the term 'Northern Archaic' is still in common usage as in "...most researchers agree that the Northern Archaic and Northwest Microblade traditions gradually evolved into the Late Prehistoric Athapaskan Tradition..." and that despite "...considerable regional variability there is evidence for continuity in terms of technology, settlement and subsistence patterns" (Hare 1995: 17). Of pertinence to the proposed Taye Lake and Taltheilei composition of Late Northwest Interior culture is the observation that "...while continuity is evident between the two most recent prehistoric phases of the southwest Yukon - Taye Lake and Aishihik - this is not the case for the two most recent prehistoric phases of the interior northern Yukon - Old Chief and Klo-Kut - yet similarities are evident between Taye Lake and Old Chief and between Aishihik and the Klo-Kut phase" (Greer and LeBlanc 1983: 34). Despite the implication of a cultural discontinuity in the northern Yukon, continuities do exist between the Old Chief and Klo-Kut phases (LeBlanc 1984). Aishihik and Klo-Kut are both Period V constructs that terminate with historically documented Athapascan-speakers.

Certainly one of the most momentous events to take place in Canada during Period IV was the eastward expansion of a branch of Late Northwest Interior culture. This migration extended on an east-west axis for 1,500 km and ranged from the Arctic coast to the northern Prairie provinces on the opposite axis. The place of origin of the migrants is believed to have been northern British Columbia although limited information from this region currently precludes demonstration of such. While it has been speculated that the Taltheilei complex spread rapidly in the barrengrounds and northern forests via the Peace River (Gordon 1996: 115) it is also likely that some groups moved down the Liard River into the lower Mackenzie River drainage and then eastward. For example, the concentration of early Taltheilei complex sites is immediately east of Great Slave Lake (Gordon 1996: Figure 6.2). Further, both early and middle Taltheilei complex-like artifacts, such as stemmed, lanceolate, and pentagonal points, have been recovered in the Fort Liard region (Fedirchuk 1970: Figure 3; Millar 1968; Noble 1971: 111). It appears to be assumed that this major population movement was a single event whereby a pioneering population gave rise to subsequent populations in the east, particularly during favourable climatic conditions that permitted caribou herd growth during middle Taltheilei times (Gordon 1996). It is more probable that the first pioneers were followed by subsequent population movements out of the original homeland and particularly during middle Taltheilei complex times around AD 250. The lanceolate points and other artifacts from the Karpinsky site in the Peace River area of Alberta were radiocarbon dated to Period V but typologically should date to Period IV. Subsequent work in the region led to the observation that "Only recently, after making an intensive survey of the Peace River between the British Columbia border and Dunvegan only 25 miles northwest of the Karpinsky site, did I finally realize that the Karpinsky assemblage is probably typical of Peace River country archaeology during the last two millennia" (Bryan and Conaty 1975: 85). A 1964 survey, between the juncture of the Smoky River with Peace River and north to Fort Vermillion by the writer and William C. Noble, suggested the presence of possible early and middle Taltheilei points as well as presumably contemporary Late Plains culture points (mainly Besant complex) (Canadian Museum of Civilization, Manuscript 1650 - Vol.I). There is apparently a local legend among the Chipewyan of the upper Churchill River that their "...center of dispersion was the Peace River region..." (Smith 1981: 271).

It has been normal practice at the end of the section on **Cultural origins and descendants** to provide the readership with a list of references containing radiocarbon dates pertinent to the chapter in question. Period IV radiocarbon dates on Late Northwest Interior culture sites are widely scattered in various publications. The following listing is very incomplete and, as with radiocarbon dates from sites in the eastern Subarctic of Canada, the dates are fraught with problems of forest fire and humic acid contamination as well as serious cultural context problems. Not only are forest fires endemic to the region but the veneer archaeological deposits are exceptionally vulnerable to contamination, both cultural (e.g. see Hinshelwood 1996) and natural (mixture of old and recent charcoal). For the Yukon see LeBlanc (1984) and Workman (1978) and east of the Mackenzie River see Gordon (1996) and Noble (1971). Other dates can be found in Wilmeth (1978) and Dickson (1976).

Technology:

Late Northwest Interior culture technology essentially relates to the stone tool component. Soil conditions either do not permit survival of organic materials or, when bone is preserved, the sample of bone tools is simply too small to represent a significant equation in any overview of the tool kit. With reference to stone tools in the Lake Athabasca region, but with much wider application, is the observation that "...the difficulty of recognizing retouch on the predominantly quartzite and quartz artifacts resulted in many tools being discovered in the flake bags. The extreme economy of effort with which so many of the prehistoric tool-makers of the area achieved their ends only became fully apparent in the laboratory" (Wright 1975: 1 & 3). Table 22 compares the stone tool kits from four Late Northwest Interior culture sites, two each from west (Taye Lake complex) and east (Taltheilei complex) of the Mackenzie River Valley. Sites were selected on the basis of geographic representativeness, sample sizes, published artifact descriptions, and the degree of control over archaeological context. Some researchers might prefer the comparison of various artifact types rather than the simple frequencies of basic tool categories. Such an approach is eschewed here on the grounds of limited samples of artifact 'types' and the belief that the composition of the basic tool kit represents a significant culturally determined entity. For example, when the composition of the tool kits of the four Late Northwest Interior culture sites are compared with the widely distributed six comparative units of Late Plains culture (Table 15 in Chapter 26) it is apparent even without compensating for factors like site function, that sites on the Plains have significantly higher frequencies of points with an average of 26% of the total assemblage compared to 9% in the north. Only the caribou crossing hunt camp at the Migod site had a significant percentage of the tool kit composed of points (16%). However, at the Taltheilei complex Karpinsky site, in the Peace River Valley of northern Alberta, 24% of the assemblage consisted of points (Bryan and Conaty 1975). Unfortunately, this site was highly disturbed and the significance of the collection removed from an archaeological context may be questioned. In contrast to most point frequencies, the representation of biface knives and scrapers were quite similar in the two cultures.

The Rat Indian Creek site in the northern interior of the Yukon is represented by the two lower occupation levels of the site (6 and 6a), dated to the first 500 years of the Christian era (LeBlanc 1984). In the southwestern Yukon, the Chimi site levels 1 to 3, occurring below the White River volcanic ash dated to ca. AD 500, are estimated to date in the same range as the Rat Indian Creek sample (Workman 1978: Table 26). The acronym 'BAP' stands for the Beaverlodge-Athabaska-Portage site in northern Saskatchewan. Materials recovered from the sand level of the excavations are considered and, on the basis of typology, are estimated to date between 600 and 100 BC (Wright 1975). Level 2a of the stratified Migod site, on the Dubawnt River in Keewatin District, was the most productive Taltheilei complex level from the site and dates from 100 BC to AD 500 (Gordon 1996).

The Rat Indian Creek site, situated on a stretch of quiet water of the Porcupine River, is regarded as a caribou hunting station that probably involved a late summer to fall occupation. In contrast, the Chimi site is situated in a protective position at the northern end of a large lake and probably represents a winter camp site. Fish were likely important although the faunal evidence was dominated by caribou and snowshoe hare, the latter, in particular, supporting the likelihood of a winter occupation. The BAP site is situated over 100 m back from Lake Athabasca on the south facing flank of a large esker system. The site would have had ready access to a number of resources and, in particular, fish, caribou, and moose. Bone preservation was lacking. Containing the entire archaeological record of the human occupation of the barrengrounds, the Migod site is situated at a narrowing in the Dubawnt River used by caribou as a crossing and

Category	Rat Indian Creek		Chimi		BAP		Migod	
	f	%	f	%	f	%	f	%
Points	3	6.1	21	9.5	2	2.6	16	16.3
Scrapers*	11	22.5	147	66.8	38	50.0	29	29.6
Biface knives	10	20.4	27	12.3	9	11.8	25	25.5
Uniface knives	-	-	-	-	-	-	11	11.2
Wedges	2	4.1	6	2.7	6	7.9	5	5.1
Chithos	4	8.2	4	1.8	-	-	6	6.1
Choppers	3	6.1	1	0.5	-	-	1	1.0
Gravers	-	-	1	0.5	-	-	2	2.0
Punches	-	-	-	-	-	-	1	1.0
Whetstones	4	8.2	2	0.9	7	9.2	2	2.0
Adze bit flakes	-	-	-	-	-	-	P	P
Modified cobble spalls	10	20.4	2	0.9	1	1.3	-	-
Hammerstones	2	4.1	-	-	9	11.8	-	-
Microblade core	-	-	1	0.5	-	-	-	-
Burins	-	-	8	3.6	-	-	-	-
Flake knife	-	-	-	-	1	1.3	-	-
Linear flake	-	-	-	-	1	1.3	-	-
Mano	-	-	-	-	1	1.3	-	-
Netsinker	-	-	-	-	1	1.3	-	-
Totals	**49**	**100.1**	**220**	**100.0**	**76**	**99.8**	**98**	**99.8**

TABLE 22: COMPARISON OF THE STONE TOOL KITS FROM FOUR LATE NORTHWEST INTERIOR CULTURE SITES Note: * means mainly end scrapers are involved but could not be accurately quantified for all sites. P means present but unquantifiable. In the report on the Migod site a number of single artifacts were counted twice on the basis of changing functions e.g. a broken point subsequently used as a wedge was counted as both a point and a wedge (Gordon 1996: Table 5). In the above Table only the final function of tools from the Migod site were quantified.

would have been occupied seasonally from the late summer to early fall (Gordon 1976). Lake trout are also abundant in the swifts and rapids (personal experience). Bone preservation was negligible.

Despite their wide distribution and differing site functions, the stone tool kits of all four sites are dominated by points, scrapers, and bifacially flaked knives. Wedges and whetstones represented the only other implements to occur on all of the sites. Use-polish studies suggest that most wedges were actually a form of burin used in slotting, cutting, and scraping functions (Wright 1972b: 9) although bipolar cores may also be involved that are suggested to have functioned as splitting wedges used with a hammer (Gordon: 1996). Obviously more objective use-wear studies are called for with reference to wedges if their major function(s) are to be determined. The term 'whetstone' is used here rather than 'abrader' as the majority of the implements were manufactured of slate, a sedimentary rock with relatively limited abrasive qualities. Chithos, an Athapaskan word for a specialized stone hide scraping tool with a relatively dull bifacially retouched edge on a spall of generally fissile material like partially silicified sandstone, were only missing from the BAP site although they have been recovered from related sites in the Lake Athabaska area. Choppers and modified cobble spalls were recovered from three of the four sites. Other tool categories from the two western sites represented less than 5% of the total assemblages and while the frequencies of minor tool varieties was significantly higher for the two eastern sites the actual categories from the two regions were different. Definition of some of the less self-explanatory terms are as follows: uniface knives are cutting implements whose ventral surface is an unmodified flake scar except for marginal retouch; gravers have a specially worked narrow tip believed to be have been used for fine graving functions; punches are specialized ground slate implement with a perforating tip; adze bit flakes had been accidentally broken off the cutting edge of flaked stone adzes with polished bit edges; burins refer to flake burins used in a number of scoring, whittling, and cutting functions; linear flake is a long and narrow flake with a triangular crossection; mano is a natural cobble, usually of an abrasive stone, with evidence of grinding on one face; and netsinker refers to a notched stone used to weight the bottom edge of a net although sometimes netsinkers consisted of unmodified rocks that cannot be identified as artifacts (Clark 1975: Plate 28A).

In some Late Northwest Interior culture sites one of the three major categories of artifacts, points, scrapers and biface knives, can be absent such as at the AD 200 Sandwillow site on the Coppermine River that produced five points, three knives, a chipped and ground adze, a bone implement as well as chipping debris and utilized flakes but no scrapers (McGhee 1970). At the likely early to middle Taltheilei winter camp site of Karpinsky in the Peace River country of northwestern Alberta the frequencies of tools were as follows: points - 18; biface knives - 15; end scrapers, some with lateral spurs - 17, side scrapers - 7, random flake scrapers - 5; wedges - 7; notched quartzite cobble spall - 1; hammerstones - 5; flaked axe with a ground bit - 1; and a fragment of worked bone (Bryan and Conaty 1975). Unfortunately, this important collection was recovered from a highly disturbed situation. Contrary to its Period V radiocarbon date, this site likely dates to around 2,000 years ago. Not included on Table 22 are expedient flake tools consisting of flakes detached from a core, used for cutting and scraping until they became dull and were then discarded. Such unmodified flake tools are always the most important implement in the tool kit of any stone age technology.

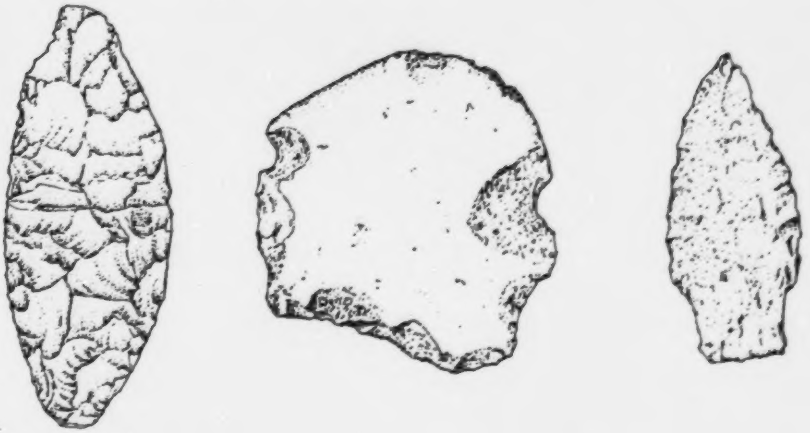


FIGURE 100: LATE NORTHWEST INTERIOR CULTURE ARTIFACTS To the left is a bipointed biface knife, a common artifact in the western Subarctic region during Period IV. In the middle is a cobble chopper notched for probable hafting. Modified cobble core and spall tools have a wide distribution. The stemmed point to the right is representative of an early style of lancehead typical of the Taltheilei complex although similar points have appeared as a minority form west of the Mackenzie River in association with the dominant lanceolate point. For example, most of the stone tool assemblage from the occupations of the Annie Lake site in the southern Yukon that are pertinent to Period IV (Hare 1995), including the asymmetric shouldered stemmed points with basal spurs, are similar to Taltheilei complex implements. Such points are the hallmark of the earliest appearance of Late Northwest Interior culture to the east of the Mackenzie River. (Drawing by Mr. David W. Laverie. Scale variable.)

Detailed study of the nature of such flakes and the characteristics of the cores from which they were detached promises to provide insights into technological trends and culture history that would otherwise be unavailable if traditional 'finished tool' analysis was relied upon (Gotthardt 1990; LeBlanc 1984). Such a study of the core striking platform characteristics and core face angles disclosed significant differences between sites in the eastern half of Lake Athabasca and the western half (Wright 1975).

Nothing substantive can be said regarding temporal trends in the stone tool kits shown on Table 22 as most of the sites are approximately contemporary. Trends in the tool kit, determined from the eight Taltheilei levels of the Migod site (Gordon 1976: 267-272), are suspect given the low samples except for level 2a (Ibid: Table 5). Early

Taltheilei, however, is characterized by varieties of stemmed points, particularly broad stemmed points, end scrapers, wedges, biface knives, chipped and ground adzes, chithos, and narrow whetstones while the subsequent middle Taltheilei points are mainly lanceolate and pentagonal forms with minor numbers of stemmed points and, in addition to the other earlier artifact categories, also has gravers and slate punches or awls (Gordon 1996).

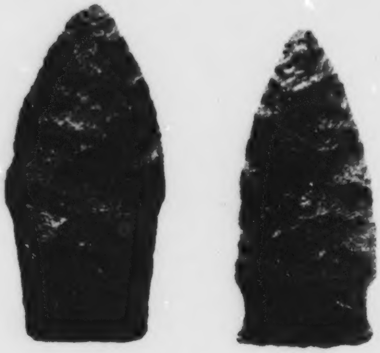
A microblade core recovered from the Chimi site was originally discounted as being extrusive from an earlier occupation of the site (Workman 1978). It is now recognized that "The co-occurrence of microblades and notched points in many areas of the western subarctic is no longer a significant point of contention" (Morrison 1987: 62). In fact, microblade technology did not entirely disappear from the western Mackenzie District of the Northwest Territories and parts of the Yukon until 2,000 years ago (Clark 1991: 144). While the Taye Lake complex is related to sites in the northern Yukon, adjacent Alaska, western Mackenzie District, and northern British Columbia (Clark 1981: 115; 1992: Table 2, 90), comparisons have been complicated by the assumption that both notched points and microblade technology represent cultural diagnostics having mutually exclusive cultural significance. An increasing number of instances of associated microblade industries and notched points has prompted the observation "...that perhaps the microblade industry should not be given primacy as an index trait" (Clark 1981: 115).

Despite differences in the stone chipping technologies of the Period IV and Period V levels of the Rat Indian Creek site, technological continuities are recognized (LeBlanc 1984). In terms of differences, bifacial trimming flakes, resulting from a cobble core reduction process focusing on the production of expedient flakes, were more common in the lower deposits (Ibid: 93). The Rat Indian Creek site and related materials in the northern Yukon have been dated between 900 BC and AD 700 and assigned to an Old Chief phase. Bone implements were rare. Only the pre-ash levels of the Chimi site in the southern Yukon produced a significant numbers of bone implements. These consisted of single and multiple barbed points, tool handles, awls, scrapers (?), and flakers (?) (Workman 1978: 330-343).

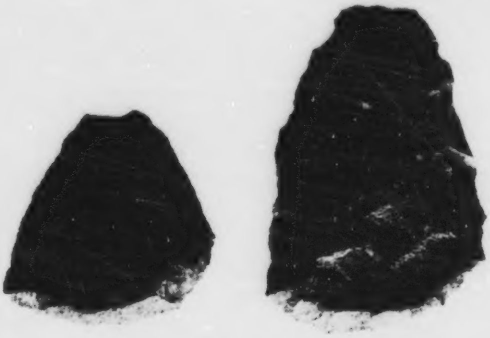
A detailed study of Taltheilei complex technology (Gordon 1996) in Keewatin District and the eastern District of Mackenzie has provided a number of insights into Late Northwest Interior culture. Period IV incorporates what Gordon calls early and middle Taltheilei (see Gordon 1996: 85-141). An interesting aspect of this study was the separate consideration of barrenground (warm weather) and forest (cold weather) sites. The finding that barrenground projectile points were longer than those in the forest, with less evidence of resharpening, is not surprising. Weapon systems would have been in prime condition for the all important late summer to fall caribou hunt whereas in the winter, with suitable stone not being available, increasing point resharpening would naturally result in shorter points. This finding is reinforced by the more intensive core-flake reduction and conservation, in the form of both retouch and evidence of use, from the forest sites. It should be noted that Taltheilei complex specimens recovered from the surface or in nonspecific archaeological contexts were assigned to early, middle, or late positions on the basis of their typological relationship to specimens from stratified, dated sites (Ibid: 85). Whereas early Taltheilei complex points are stemmed those of middle Taltheilei are mainly lanceolate forms. Broken projectile points were also sometimes modified into burins, a trait that is found in all of the cultures that occupied the barrengrounds except for Early Palaeo-Eskimo culture who had their own styles of specialized burins.

A significant number of tools from the Keewatin sites, both barrenground and forest, are complete although point bases do outnumber point tips suggesting repair of weapons at the base camp. Base fragments would have been brought back to camp still lashed into the spear shafts to be discarded when replaced by a complete weapon tip. Most points, knives, and scrapers were manufactured from locally available quartzite cobbles but chithos were usually made from a silicified sandstone and whetstones from slate. Adzes were generally fashioned from basalt.

The bow and arrow does not appear in the Taltheilei complex until well into Period V (Noble 1981: 103), much later than its appearance in regions to the south and east. This situation would also appear to pertain to the Taye Lake complex to the west. A major factor was likely that the handheld lance was a superior weapon for spearing caribou fording rivers and lake narrows and dispatching animals caught in pound snares. In this respect, Late Northwest Interior culture retained an earlier weapon system because it best met their needs in hunting caribou. How significant a role the spearthrower played cannot be determined as the same weapon tip could function on either a lance or a javelin. Presumably both weapon systems, handheld lances and spearthrowers, were used as circumstances dictated. In addition to the changing styles of weapon tips, tool categories that occur throughout the more than 2,500 year of the Taltheilei complex are bipointed biface knives, chithos, bar whetstones, a range of scraper forms - mainly end scrapers, linear flakes, hammerstones, and wedges. Rare copper items, such as awls, are also represented (Gordon 1996: Figure 6-12) but unfortunately efforts to trace copper to its geological source have so far not been successful (Franklin et al. 1981).



"A"



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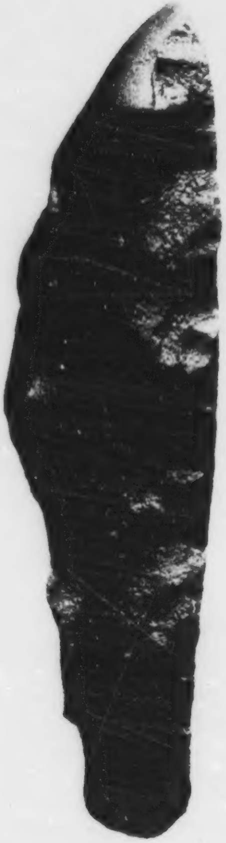

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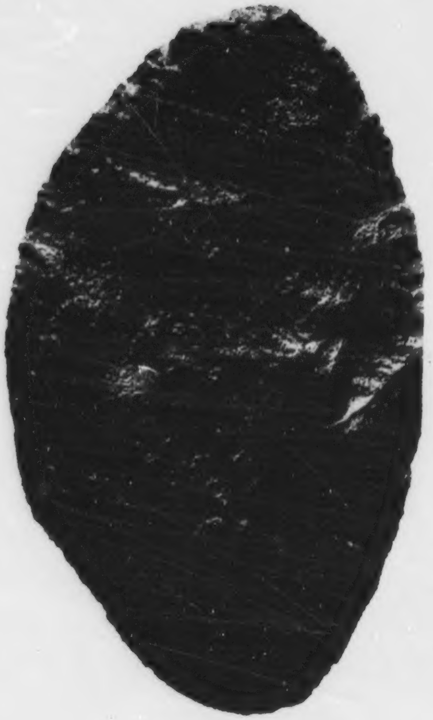


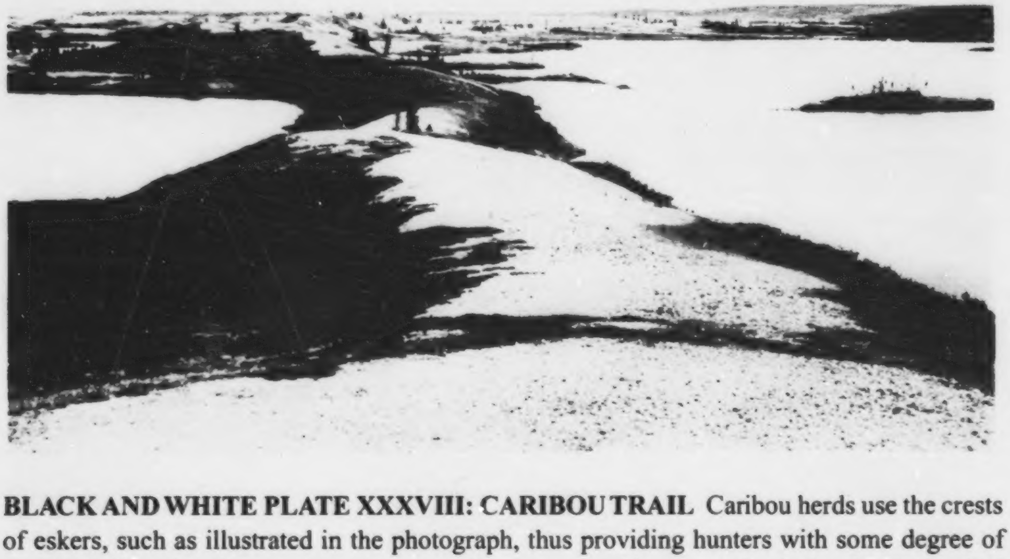
"C"

BLACK AND WHITE PLATE XXXVII: EARLY TALTHEILEI COMPLEX ARTIFACTS A - typical broad stemmed points, B - end scrapers, C - biface knife, and D - lateral view of a chipped and ground adze with cutting bit at the top. (collage adapted from Gordon 1996, Figures 6.3, 6.4, 6.9, and 6.12 with original plates provided by Dr. Bryan B.C. Gordon, Archaeological Survey of Canada, Canadian Museum of Civilization - Scale: variable).

Subsistence:

Caribou (*Rangifer tarandus*) must be awarded the place of primary importance to the Late Northwest Interior culture people. Fish were also important, particularly in the summer and fall. It is highly unlikely that people could have survived in the western Subarctic without the combination of caribou and fish. Moose and snowshoe hare, while periodically of critical importance, were secondary sources of sustenance. Plants were likely more important than either archaeological or ethnographical information would suggest. Vitamin C in dried berries would have been an important winter supplement in order to hedge against the dangers of scurvy stemming from a predominantly meat diet. Ethnographical observation, however, usually accord plant materials, including berries such as cranberries, raspberries, strawberries, blueberries, and bearberries, to an unimportant role in subsistence (Helm 1961: 22). Caribou were of particular importance in the northern regions of the area under consideration and would have involved the Porcupine herd in the northern Yukon and the Bluenose, Bathurst, Beverley, and Kaminuriak herds east of the Mackenzie River. These herds had specific northern calving areas and followed more or less regular seasonal migratory tracks between the calving grounds and the more southerly winter ranges. Thus people could establish their hunt camps in the migration path and anticipate success in intercepting caribou. Rat Indian Creek represents a good example of such a site in the northern Yukon (LeBlanc 1984) as would the Migod site in the barrengrounds of Keewatin District (Gordon 1976). In addition to intercepting migrating caribou, which frequently involved lancing the animals as they swam across bodies of water, elaborate pounds would have been constructed that funnelled the caribou into a maze of snares where the entrapped animals could be lanced or clubbed. While recent caribou pounds have been identified such structures cannot be expected to survive archaeologically and would have to be inferred from indirect evidence (Clark 1987: Chapter 7). Caribou, of course, were not only important for their meat but their hides, sinew, bone, and antler. Hides were necessary from tent covers, clothing, bedding, and leather thongs for innumerable purposes such as snares and snowshoe webbing. During periods of starvation, an all too likely event in the harsh winters of the western Subarctic, caribou hide clothing could even become a survival food. Although referring specifically to the

Great Bear Lake region, the following quotation could equally apply to all of the region under consideration: "The success of the Satudene's delicate balance with nature in this severe environment hinged upon his freedom and ability to search for food and other material requisites wherever they were to be found. For the essentials of his existence, as we have clearly seen, were not all procurable at any one place nor at each and every season. It was necessary to hunt at one place for part of the year and fish at another for the remainder of the year. The migratory and transient nature of the caribou meant that the Satudene had, for much of the year, to be constantly on the move. If sufficient meat and hides were obtained, than (sic) he and his family might camp for a while at one location, particularly if this location also supplied them with fish. The Indians could not, however, survive for any length of time on fish alone..." (Morris 1972: 15). Caribou migratory routes were also not totally predictable. Indeed, "So unpredictable was its rhythm that the Indians often referred to the fireflags of the aurora borealis as ed-then or caribou, for "the caribou are like ghosts; they come from nowhere, fill up the land, then disappear" (Whalley, 1962, p.198)" (Morris 1973: 8).



BLACK AND WHITE PLATE XXXVIII: CARIBOU TRAIL Caribou herds use the crests of eskers, such as illustrated in the photograph, thus providing hunters with some degree of predictability of caribou movements as well as opportunities for ambush despite the limited forest cover. Such esker systems are quite common in the eastern District of Mackenzie and Keewatin District. (Reproduced from Gordon 1996: Figure 1.2)

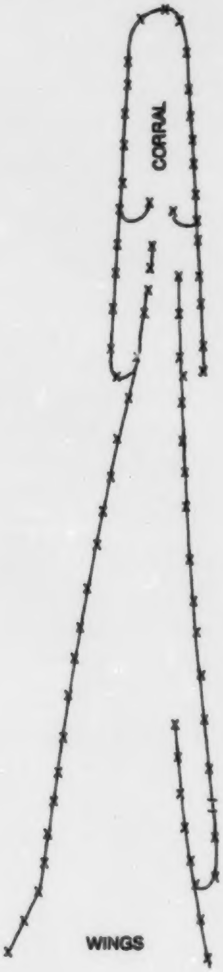


FIGURE 101: CARIBOU POUND Although this drawing depicts a Period V northern Yukon Kutchin pound, structures applying similar principles would likely have been used during Period IV and probably earlier. Only the pound or corral and short sections of the wings leading to the pound are shown here. In this instance, the wings were 3.2 km long. Using topography to aid in the process of funnelling animals, a caribou herd would be intimidated by human drivers to enter between the wings made of brush and trees that would then channel the animals into the pound where they would become entangled in snares and lanced. (Reproduced from Clark 1991: Plate 29).

Throughout most of the western Subarctic acid soils assured that bone would not survive. Subsistence practices must, therefore, be largely inferred from site locations. Inferences based upon settlement patterns are sometimes supported by instances of bone preservation, particularly in the west, or the analysis of small calcined bone fragments (e.g. Gordon 1996: 139-140). The assumption that fish were unimportant at caribou crossing sites because of the absence of archaeological fishing gear (Gordon 1996: 240) is inappropriate. Most caribou crossing sites involve swift water containing an abundance of fat-rich lake trout or other fish species, a resource most unlikely to be overlooked while awaiting the appearance of the caribou herds. Most fishing would also have been done with nets that would leave no archaeological trace. Further, the delicate fish bones were most unlikely to survive for long in the generally acid soils or would be totally consumed as dog food or by scavengers. There is little doubt, however, that the major purpose for locating at the caribou crossings was caribou and not fish. This focus on caribou is also suggested by site distributions on Great Bear Lake where site densities at the eastern end of the lake can be attributed to caribou even though fish, such as lake herring, whitefish, lake trout, and grayling, were important (Clark 1987: 288, 298). In

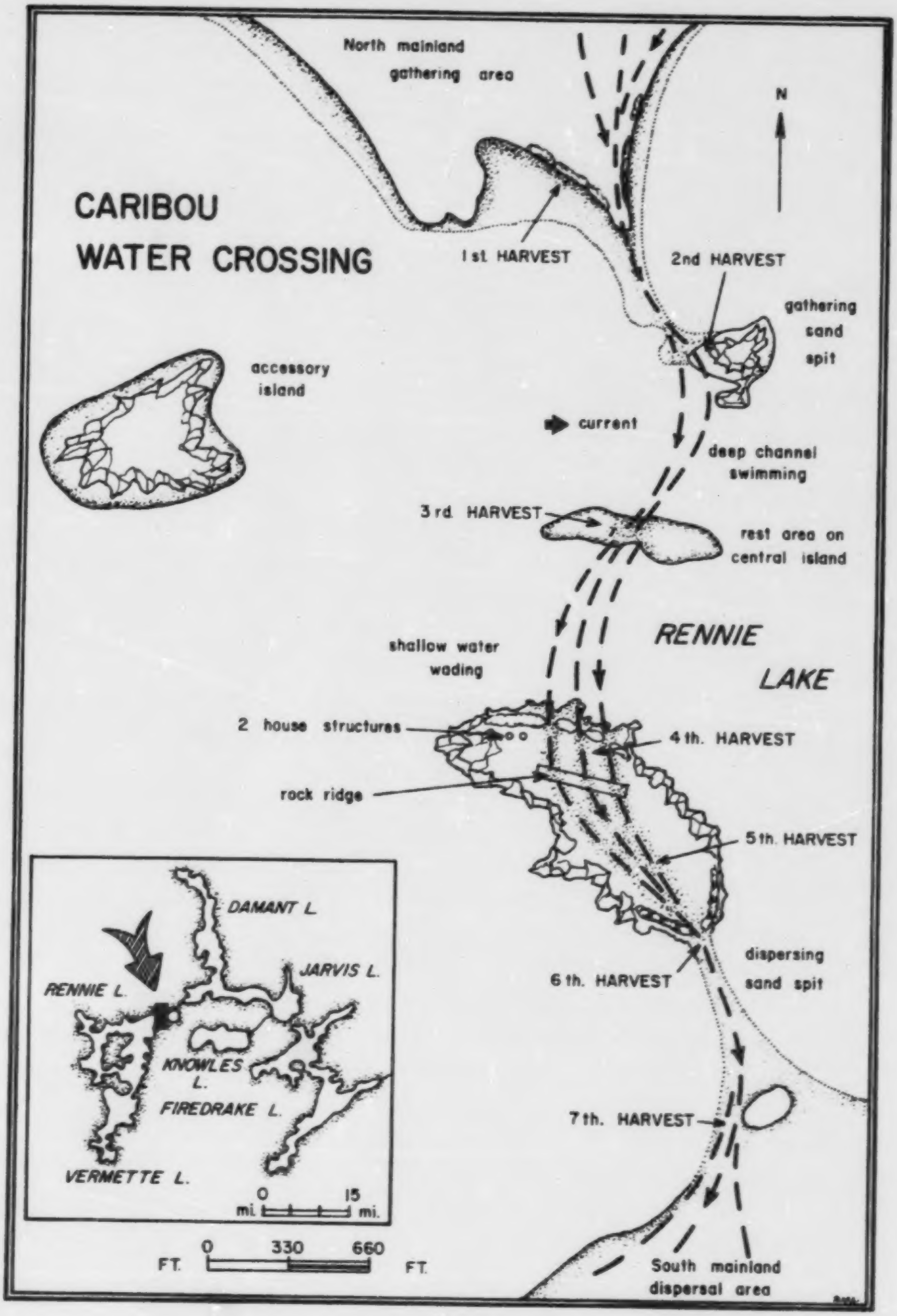

CARIBOU
WATER CROSSING
North mainland gathering area
N
1 st. HARVEST
2nd HARVEST
gathering sand spit
accessory island
current
deep channel swimming
3 rd. HARVEST
rest area on central island
RENNIE LAKE
shallow water wading
2 house structures
4 th. HARVEST
rock ridge
5 th. HARVEST
dispersing sand spit
6 th. HARVEST
7 th. HARVEST
South mainland dispersal area
DAMANT L.
JARVIS L.
RENNIE L.
KNOWLES L.
FIREDRAKE L.
VERMETTE L.
0 15
mi. mi.
0 330 660
FT. FT.

FIGURE 102: CARIBOU WATER CROSSING Situated in the southeastern District of Mackenzie adjacent to Keewatin District, this site, in an area of transition between the Lichen Woodland and the Tundra, illustrates how a herd of caribou migrating southward would be killed at a number of specific locations during the crossing when the animals were most vulnerable to attack by canoe and ambush on the peninsulas and islands. (Reproduced from Gordon 1996: Figure 1)

Taye Lake complex sites (Old Chief phase) in the northern Yukon the combination of caribou supplemented with fish appears to have prevailed. At the Chimi site in southwestern Yukon, where bone preservation existed, caribou and snowshoe hare dominated the faunal evidence with minor numbers of other species (Workman 1978: Table 27). Even though this site was likely a winter occupation and situated in a favourable fishing location there was relatively little direct evidence of fish remains. If the occupants of the site followed the common Subarctic practice of feeding fish remains to the dogs, little in the way of direct evidence could be anticipated. For those site on the Pacific drainage, of course, salmon would have been important. As recorded ethnographically, fishing was always important to varying degrees given the predictability of the fish resource (Birket-Smith 1930; Osgood 1932: 38-39).

Evidence of caribou bone mash on Taltheilei complex sites suggests the probability of grease rendering and even pemmican production (Gordon 1996: 110). There has been the suggestion that fires were set to improve ease of hunting (Noble 1974: 162) and while such fires would temporarily destroy caribou forage they would tend to concentrate the animals in areas with available browse. On the other hand, such fires could have been accidentally started by signal or smudge fires.

Settlement patterns:

In view of the fact that bone preservation is generally absent to the east of the Mackenzie River and can also be quite variable to the west, evidence bearing on subsistence can best be gleaned from settlement patterns or, put another way, how people distributed themselves across the land. In a region characterized by an abundance of food resources for only short periods of the year and sometimes subject to unpredictable migratory behaviour (caribou) and cyclical crashes (snowshoe hare) it was absolutely essential that Late Northwest Interior culture hunters and their families be highly mobile. Only the fish resource was dependable in terms of prediction and abundance but the harvest could be frustrated by high winds on large bodies of water, early freeze-up, and

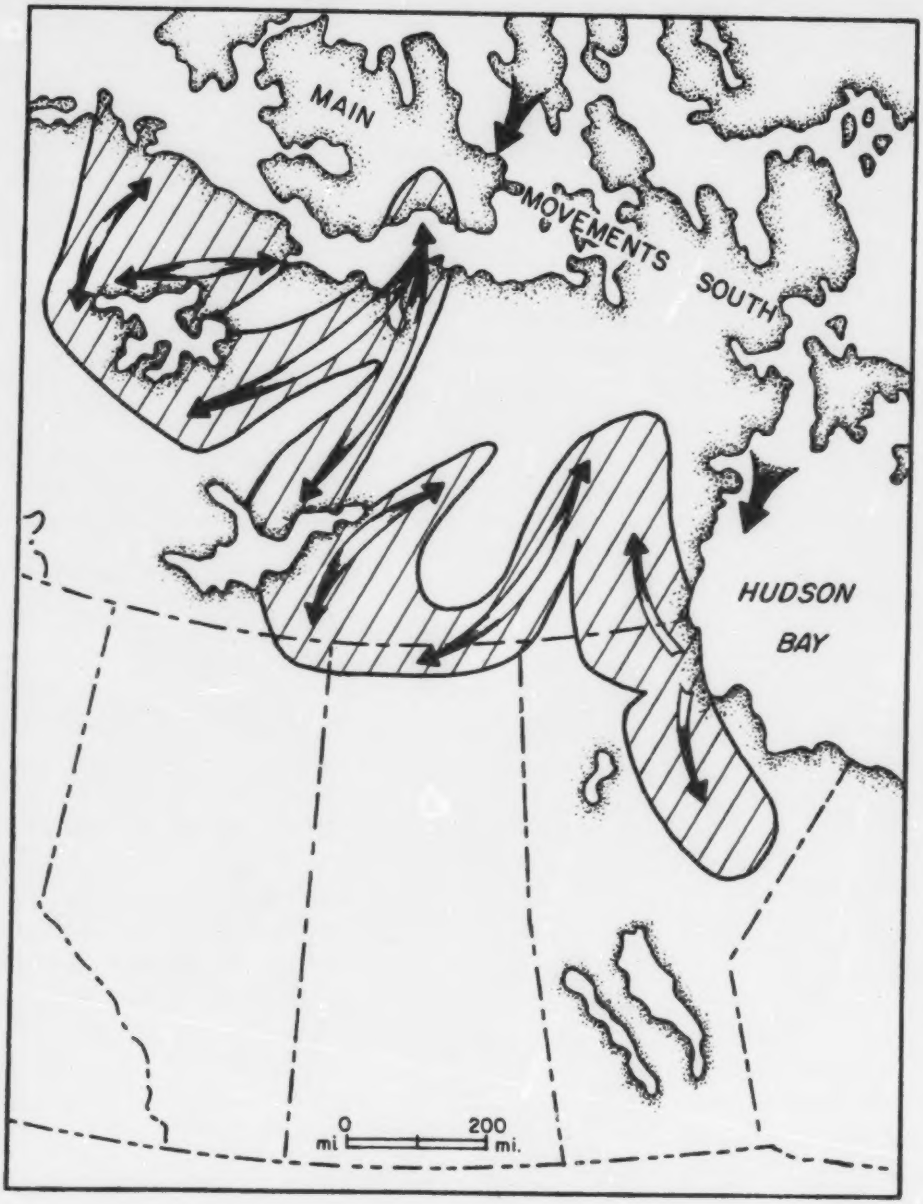

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FIGURE 103: BARRENGROUND CARIBOU HERD DISTRIBUTIONS Migration routes between the northern calving grounds and southern wintering ranges are shown for the four major barrenground herds east of the Mackenzie River. (Reproduced from Gordon 1981: Figure 2)

other factors. While archaeological evidence clearly indicates the existence of many small, transitory camps, excavations have naturally focused on those areas where people would return season after season to a productive fishing location or caribou crossing. Thus, the present archaeological evidence is strongly biased against what was undoubtedly the most common settlement practice involving one or possibly two to three families moving together for much of the year wherever there was food available to support them. There were also differences in the availability of food over the enormous area under consideration. In certain favoured locales, situated on the Pacific drainage in the west, seasonal salmon runs would have been important while to the north and east caribou was of paramount importance. It is most convenient to consider settlement patterns separated into the Taye Lake complex to the west and the Taltheilei complex to the east with the Mackenzie River acting as a rough boundary between the two. A number of reasons can be suggested for the currently poor archaeological knowledge of the Mackenzie River Valley despite the concerted efforts of archaeologists. Food resources tend to be scattered in the area rather than seasonally concentrated as in other regions. In fact, there is some suggestion that settlement patterns in the Mackenzie River Valley focused on the small tributaries and lakes rather than the main river (Clark 1987: 284). This view is certainly upheld by the concentration of archaeological sites in the Fishermans Lake area a short distance to the west of the Liard River, a tributary of the Mackenzie River. Unfortunately most of these materials are not adequately described in print (e.g. see Morrison 1984a). Not only is the Mackenzie River unimportant as a source of salmon but spring floods with ice gouging would have destroyed most summer site locations.

I. TAYE LAKE COMPLEX:

A majority of sites west of the Mackenzie River consist of the meagre remains from small, transitory camps frequently containing no more than a handful of stone flakes, some fire cracked rock, and possibly some calcined animal bone. These limited archaeological remains are then hopelessly mixed with the equally limited debris of earlier and later site occupants by frost action and disturbance resulting from animal burrowing, treefalls, and human activities. Large sites in the Yukon and the western District of Mackenzie are invariably a product of repetitive seasonal use. Dwellings are generally absent or, more accurately, difficult to recognize archaeologically (e.g. Black and White Plate XXXVI). Pit house dwellings, however, have been identified in the northern Yukon. At the Old Chief Creek site a 6 by 8 m and 45 cm deep pit house with a peripheral berm was dated to 2,000 years ago (Cinq-Mars 1974; LeBlanc 1984: 427). This large fall-winter dwelling was re-used on a number of occasions, with large logs being used in the roof construction. Its large size indicates that it was occupied by a number of families. Another pit house at the same site was dated to 1,000 BC and a 2,000 year old pit house was trenched at the Lazarus site in the same region (LeBlanc 1984). These particular pit house sites were situated on the Porcupine River at caribou interception locations. For example, the Rat Indian Creek site is strategically located along a stretch of quiet water with good vistas both up and down the river (LeBlanc 1984: 26). Features tend to be rare with hearth floors being most common. Hearths usually contain calcined bone, fire cracked rock, and other cultural debris. A single refuse pit and a deposit of highly comminuted bone resulting from grease rendering are also recorded. At the stratified Annie Lake site in the southern Yukon a single large cobble hearth associated with chipping floors and cultural debris is recorded and dated towards the end of Period IV (Hare 1995: Figure 4.5) while at the Chimi site a possible tent floor, measuring 4.6 by 3 m, was partially demarcated by rock tent weights and concentrations of cultural debris (Workman 1978: Figure 56). Hearths, represented by concentrations of fire cracked rock, were also recorded at this site.

Fingerprinting exotic materials to their geological sources and thus providing some indication of population mobility, trade networks, and inter-band relationships is still in its infancy. A distinctive welded tuff, an obsidian-like stone that outcrops in the Tertiary Hills north of the juncture of the Keele River with the Mackenzie River in the western District of Mackenzie (Cinq-Mars 1973: Appendix E), is widely distributed in the Yukon and east of the Mackenzie River. It has also been found on sites from Alaska to the west end of Lake Athabaska in Alberta (Wright and Carlson 1987: Plate 14). However, much of its distribution appears to pertain to periods preceding Period IV. Obsidian from both the Mount Edziza deposits in northwestern British Columbia and Batza Tena in central Alaska has also been identified. The single piece of sheet copper from the Rat Indian Creek site could have come from southeastern Alaska or the southern Yukon (LeBlanc 1984: 389) or even possibly from the Coppermine River deposits to the east of Great Bear Lake.

II. TALTHEILEI COMPLEX:

The Taltheilei complex is particularly well known due to extensive archaeological surveys over a number of years in a region rich in caribou and fish (Clark 1987; Harp 1958; 1961; Gordon 1996; Irving 1968; Nash 1975; Noble 1971; and Wright 1972b, among others). Sites fall into two major categories; warm weather hunt camps on or near the barrengrounds at caribou water crossing points and generally much smaller sites with a more dispersed settlement distribution in the forests of the caribou winter range. The foregoing does not imply that the entire Taltheilei population seasonally migrated back and forth from the barrengrounds to the forest. Most of the occupants of the hunt camps on the barrengrounds could well have been men with relatively few women and children involved. Certainly many of the sites in the forest were clearly warm weather sites (Nash 1975; Wright 1975). If herd following from the forest to the barrengrounds and back again involved the entire Taltheilei population one would not expect to find the differences in stone varieties used in tool manufacture in the forest compared to the barrengrounds (see Gordon 1996). It has been observed that "Nor do we know how many of the Chipewyan moved into the barren lands in the summer. If all of the people shifted north, then we might expect no summer sites in the northern forest and the opportunity for some northward shift in Cree territory. However, most of the archaeological sites are in exposed locations and many of these sites are probably summer sites" (Nash 1975: 3). Most of Nash's Taltheilei complex sites, however, were late and would date to Period V. The importance of caribou to settlement patterns is clearly evident in the concentration of archaeological sites at the east end of the Great Bear Lake, where caribou were most readily available, as opposed to the western end of the Lake (Clark 1987). Similar east versus west concentrations of sites have been noted for both Great Slave Lake (Noble 1971) and Lake Athabasca (Wright 1975). Not only were the eastern regions of these lakes richer in wintering caribou but they were also within convenient commuting range into the barrengrounds. This situation is reflected in Taltheilei complex sites from the Coppermine River and Great Bear Lake, to the west, sharing some of the same stone materials (Clark 1987: 184). Survey north and west of Great Bear Lake revealed numerous veneer sites, particularly in the Colville Lake region on the headwaters of the northward flowing Anderson River (Clark 1975). Indeed, one could say with few qualifications that the distribution of theTaltheilei complex correlates with the distribution of the barrenground caribou. This correlation extends as far south as the Churchill River in Saskatchewan (Meyer 1983: Figure 11.4) and Southern Indian Lake in northern Manitoba (Dickson 1980).

Except at the caribou river crossing sites in the barrengrounds, near the tree line most sites, as with the Taye Lake complex, are small (Gordon 1996: iii) but like the larger sites were usually repetitively occupied. The BAP site on the northshore of Lake Athabasca, for example, was multicomponent and lacked evidence of features other than some chipping floors and scattered large rocks that probably represented lodge cover weights (Wright 1975: Figure 4). Given the site's location and the resources in the area it could have been occupied at anytime of the year. On this same lake a Taltheilei complex site on Beartooth Island 18 km from the nearest land is a reflection of an ability to navigate a large body of water (Ibid: 105-107). Winter occupation of such an island across the ice would be courting certain death and thus the assumption that the site represents a summer occupation. As on the lake proper, site categories immediately to the east on Black Lake consisted of lookout sites, chipping stations, and seasonal camps representative of both winter and summer occupations (Minni 1976). Favoured locations were river mouths and outlets, points of land, sheltered bays, and constrictions in lakes and rivers. The sheltered IhNh-2 site, with its wide array of tool varieties and some caribou bone, would represent a major winter camp (Ibid: 44). North of the Manitoba border sites were frequently located on islands, probably to escape the myriads of biting insects, and on top of eskers, at rapids, and along lakeshores (Nash 1975: 33). Large sites in the barrengrounds are quite different from the smaller camps situated close to the calving grounds and in the forest in the caribou wintering grounds. The Aberdeen Lake site on the south bank of the Thelon River faces a Beverly caribou herd calving ground locale to the north of the river. In the summer caribou mothers and their calves regularly cross the river at this point during their southern migration. Concentrated archaeological debris, representing 7,000 years of seasonal occupations, extends for 0.8 km along the river bank and 140 m inland although this area represent but one of a number of interconnected archaeological concentrations that follow the river bank for 3.2 km. Vantage points from the site permitted hunters to observe in either direction caribou herds starting their crossing of the river over 1.5 km away thus allowing time to intercept the animals in the water. When the caribou herd crested the 9 to 15 m high river bank they could also be readily ambushed (Wright 1972b: 4-5). Taltheilei complex features at this site were lacking except for a cache of tools represented by fragments and a single complete point (Ibid: 36-38). Weight stones used to hold tent coverings in place at such multi-component sites generally represent the lastest occupation, in this instance, recent Caribou Eskimo tents. The stones themselves have likely been scavenged for thousand of years and for the same purpose. As a rule, features are rare although a monograph that will include floor plans for sites in Keewatin District and the eastern District of Mackenzie is currently being worked on (Dr. Bryan B.C. Gordon, Archaeological Survey of Canada, Canadian Museum of Civilization: personal communication).

Throughout much of the barrengrounds quartzite cobbles in glacial outwash deposits provide a ready source of stone for tool manufacture. Certain varieties of quartzite characterize specific locales and permit some insights into population movements. A distinctive red quartzite from the Aberdeen Lake region, for example, was frequently encountered at the Migod site on the Dubawnt River to the south (Gordon 1976: 272). Eyeberry Lake quartzite from the headwaters of the Thelon River in Keewatin District has been recovered from sites nearly 500 km to the south on the northshore of Lake Athabasca (Dr. Bryan B.C. Gordon: Archaeological Survey of Canada, personal communication). In other regions, lacking such a ubiquitous supply of suitable stone for tool manufacture, quarry workshops have been reported such as the McPr-1 site on the northeastern corner of Great Bear Lake that produced an abundance of green slate broken preforms and flaking debris (Clark 1987: 185-187).

Recent estimates of caribou meat, skins, and dog food requirements per person per year range from 40 to 60 animals (Kelsall 1968: 207). This would suggest that relative to the late summer-fall hunt in the barrengrounds, when caribou skins and meat were in their prime, a major logistical problem existed in transporting the considerable bulk of hides and meat to the winter camps. Given the south to southwesterly orientation of the major rivers that transect the barrengrounds and the forests, canoe transport would have been an obvious solution to move bulky winter supplies into the winter camps.

A hypothesis bearing on the relationship between specific caribou herds and specific bands of hunters has engendered some discussion. It has been argued that discrete bands of hunters specialized on the hunting of discrete groupings of caribou such as the Bluenose, Bathurst, Beverly, and Kaminuriak herds (Gordon 1975; 1996). Each of the foregoing caribou populations had their own northern calving areas and southern winter ranges (Figure 103). While this is a reasonable proposition given the necessity of hunters to be intimately familiar with the behaviour of their prey, it cannot be demonstrated until there is archaeological information from other areas equivalent to what exists for the calving and wintering areas of the Beverly herd. One could also argue on the grounds of geography (e.g. major river configurations) and practicality (e.g. ease of access to and from the forest to the barrengrounds) that the hypothesis is likely correct. It remains to be shown, however, that the technologies of the various geographic bands making up the Taltheilei complex can be distinguished from one another even when there is a sufficient body of archaeological evidence. Historical documentation does suggest that the Satudene of Great Bear Lake were associated with the Bluenose herd, the Yellowknife and Dogrib of Great Slave Lake with the Bathurst herd, and the Chipewyan with the Beverly and Kaminuriak herds (Gordon 1981: 3). If regional technological differences, reinforced by the distributions of varieties of stone used in tool manufacture, can be correlated with different caribou populations then the hypothesis would have a much wider application to herd-hunter relationships around the world (e.g. Gordon 1988).

Cosmology:

Very little evidence bearing on Late Northwest Interior culture can be attributed to ritual or belief systems. Early European observers commented on the apparent lack of ritual among northern Athapaskan people. It would not have been apparent to foreign observers that there existed a belief system centred on the all important relationship between humans and animals, particularly caribou, and the need to both avoid behaviour that could anger animals spirits and to be able to placate the offended animal when spiritual offence had been given. Otherwise the offended animals would avoid humans and famine and death would be the consequences.

Two sites on the upper Thelon River contained features consisting of fire shattered concentrations of stone implements (Gordon 1996: 97) that may relate to the historical record that a person's property was destroyed upon death (Back 1836: 447). If the features pertain to burials then presumably a scarcity of firewood prohibited cremation of the bodies otherwise fragments of calcined bone could be expected. At the Aberdeen site further down river a shallow cache 50 cm in diameter contained a complete lanceolate point, 13 fragments of biface knives and scrapers, and 104 small flakes and "With one exception all of the tools in the cache appear to represent functioning implements that had been purposefully broken for an unknown reason" (Wright 1972b: 37-38). Possibly the feature represents a grave offering where all evidence of the deceased has disappeared. Similarly, a cache of six biface knives and five side scrapers at the Gladstone site in the southwest Yukon (MacNeish 1964: 210-220) may represent offerings to a long vanished grave.

External relationships:

Throughout the western Subarctic people seasonally returned to the same sites for thousands of years. These were not always the same people but could represent a number of different cultures. This was particularly so to the east of the Mackenzie River Valley in the barrengrounds. It is not unusual for major caribou river crossing sites to contain the entire record of human occupation of the barrengrounds from 7,000 years ago to the time of European contact (Gordon 1976; 1996). Under some fortunate circumstances the cultural deposits are even stratigraphically separated from one another (e.g. Gordon 1976). All the different cultures, Northern Plano, Middle Shield, Early Palaeo-Eskimo, Late Northwest Interior (Taltheilei complex), and the Caribou Eskimo, occupied the same sites for the same reasons - migrating caribou. Rarely has such a variety of cultures been seen to occupy the same sites through such a lengthy period of time and for exactly the same purpose. Except for the Palaeo-Eskimos and the Caribou Eskimos, all of these people would have occupied the barrenground sites in the late summer to fall and then retreated southward to the protection of the forests. It has also been speculated that the EarlyPalaeo-Eskimos may have exploited the interior caribou resource on a seasonal basis and retreated northward to hunt seal on the sea ice during the winter (Wright 1995: 435-436). It was during the 19th century that the Caribou Eskimo penetrated the interior from the coast to fill a vacuum left by southward contracting Chipewyans (late Taltheilei complex) who had become involved in the European instituted fur trade. Valuable fur bearers are not to be found on the barrengrounds.

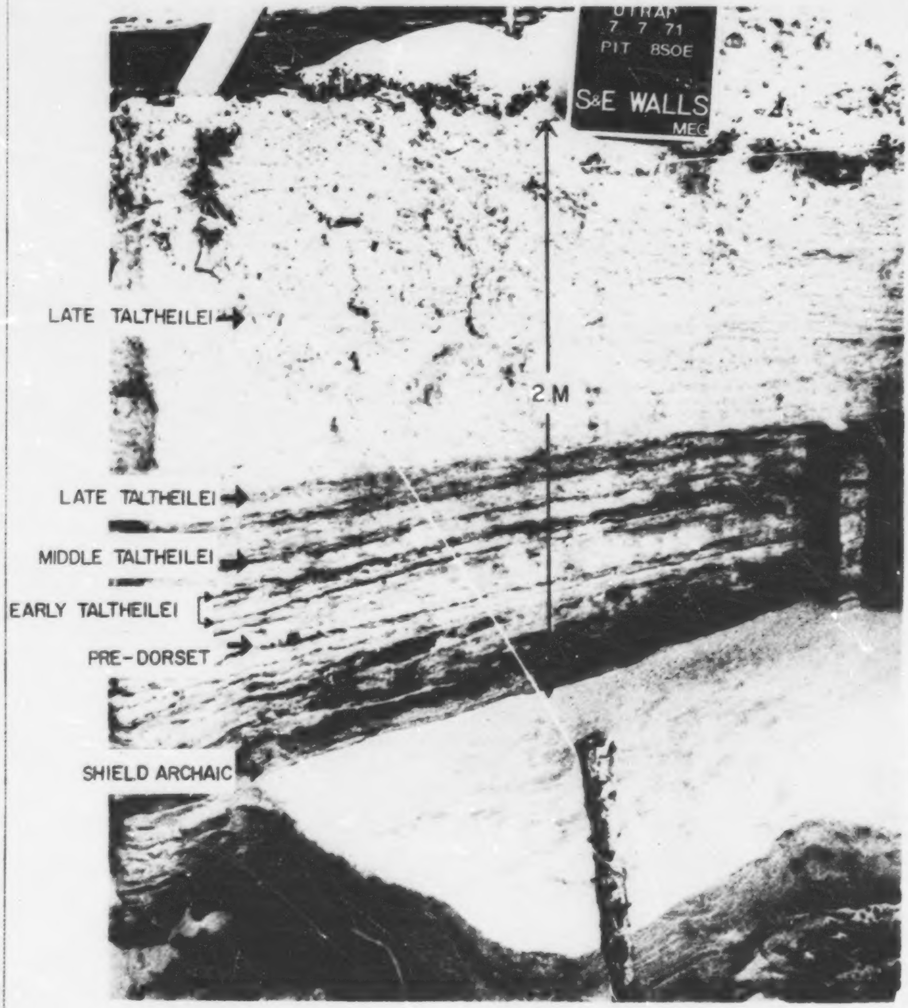
If the hypothesis is correct that the migrations represented by the Taltheilei complex moved down the Peace River in their eastward thrust it would have put the migrants in contact with Late Plains culture and, in particular, the Besant complex. Evidence of culture contacts between Late Northwest Interior culture and Late Plains culture, extending from Lake Athabasca and Great Slave Lake and eastward, is represented by a handful of projectile point styles characteristic of Late Plains culture (Gordon 1996: Figure 7.2). In northern Alberta along the Athabasca River drainage, Late Plains culture and Taltheilei complex occupations occur although the latter appear to be quite late (Pollock 1978). Sites in the Birch Mountains uplands west of Lake Athabasca contained a mixture of Late Plains culture and Late Northwest Interior culture (early to middle Taltheilei complex) occupations where "...it does not appear that one or the other predominates" (Donahue 1976: 45; 1976a). Projectile points attributed to the Pelican Lake complex of Late Plains culture from the Kame Hills site on Southern Indian Lake in northern Manitoba (Dickson 1980) can be more reasonably assigned to the Period III Middle Shield culture occupation of the area. There is, however, a possibility of Taltheilei complex and Late Western Shield culture (Laurel) contacts in northeastern Saskatchewan north of the Churchill River (Meyer 1983: Figure 11.14, 170).

The temporal separation of the Palaeo-Eskimo and the Taltheilei complex occupations of the stratified Migod site is narrow (Gordon 1976: 101) although radiocarbon dating is an imperfect tool for accurately demarcating a specific time gap between cultures. Typology provides no evidence of contacts between Palaeo-Eskimo and Late Northwest Interior cultures. It is possible that Palaeo-Eskimos had abandoned the barrengrounds prior to the arrival of the Taltheilei complex but there is no evidence that anything happened to the caribou to force abandonment of a region utilized by the former people for a thousand years. While it cannot be demonstrated, it is hypothesized that the Taltheilei complex hunters may have pushed the earlier Palaeo-Eskimo occupants out of the region.

A complex situation existed in the central interior of Alaska during Period IV where a proposed Late Denali complex, characterized by an absence of stone grinding, presence of lanceolate and notched points, microblades and burins, is believed to represent a regional variant of Northwestern Palaeo-Arctic culture (Dixon 1985: 57-59). A number of these traits are similar to those found in the Taye Lake complex, particularly in the southern Yukon.

Human biology:

Given historically documented practices of placing the deceased on scaffolds or covered with a log tomb (Morris 1973: 21) or simply exposed, compounded by the effects of acid soils on bone, little in the way of human remains can be expected to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PRE-DORSET
SHIELD ARCHAIC

MAJOR CULTURAL LEVELS IN THE JUNCTION SITE, KjNb-6 THELON GAME SANCTUARY, N.W.T.

BLACK AND WHITE PLATE XXXIX: CULTURAL CONTINUITY ON THE BARRENGROUNDS At the Junction site, on the upper Thelon River in the eastern District of Mackenzie, stratified deposits included a cultural sequence consisting of Middle Shield culture, Early Palaeo-Eskimo culture, and the entire span of Late Northwest Interior culture (Taltheilei complex) during Period IV and Period V. Such stratified sites, with their long and in some instances complete record of human occupation in the region, clearly indicate that caribou migration habits had not changed significantly through time despite changes in climate. The cultural sequence also indicates that different cultures exploited the caribou in similar, if not identical, ways. (Reproduced from Gordon 1996: Figure 1.6)

survive the passage of time. In fact, the only Period IV human skeletal remains on record is a single fragmentary deciduous premolar from a six to nine month old individual at the disturbed Karpinsky site in northwestern Alberta in the Peace River area (Bryan and Conaty 1975). The tooth was found near the surface and likely came from some form of surface burial such as scaffold or log tomb. An unusually high frequency of complete implements from this site may indicate that some represent grave offerings that were scattered by recent disturbance.

Inferences on society:

Famine in the western Subarctic was not unusual. Major loss of life due to starvation has been historically documented (e.g. King 1836: Vol.I, 170-171). Factors such as the cyclical collapse of the snowshoe hare population, thick ice preventing fishing, and local failures of moose and caribou availability, could result in famine and death. Such inherent instability in the food supply required a flexible social structure. It has been observed that "When such disaster struck, "multiple kinship avenues" to new affiliations as old ones collapsed may well have been crucial in permitting quick and socially coherent regrouping of survivors" (Helm 1965: 382). Thus, within an ascending hierarchy of social responsibility composed of the family, the local band, the regional band, and the tribe there would be cross-cutting bilateral affiliations. For example, "... between men, not only consanguinity but the affinal link through wife, sister or daughter serves as a mechanism of affiliation" (Ibid: 380). Such social mechanisms for mutual support and survival undoubtedly possess considerable time depth. It can be suspected that a social structure consisting of individual families making up a local band, local bands making up a regional band, and regional bands making up a tribe, was an indigenous system even though the components of the tribe have undoubtedly changed due to European influence. As has been noted for all Subarctic people "Their most adaptive asset may well have been a small, flexible, band organization constituted of integral economic and egalitarian units" (Maxwell 1980: 181). A critical factor in social flexibility would have been mobility. During the winter, when famine was most likely, the widely scattered small groups of two to three families not only had to know where other family groups were located but had to be able to reach them in times of need.

Polygamy and wife stealing is mentioned in the historical documents but the ability of a hunter to support more than one family in such a harsh land must have been limited to quite exceptional individuals. Leadership was likely transitory with individual autonomy being paramount. Individuals, for example, could decide what social grouping they were going to belong to and for how long depending upon circumstances.

Limitations in the evidence:

The poorly elucidated archaeological situation in northern British Columbia and the Mackenzie River Valley have already been referred to (see Clark 1992: 94). As it happens, both of these regions are critical to an understanding of Late Northwest Interior culture history. The Mackenzie River Valley stands as a major archaeological void between the Taye Lake complex to the west and the Taltheilei complex to the east, increasing the difficulties in assessing the relationship between the two complexes. It has been accurately observed with reference to the Mackenzie River Valley that "From an archaeological point of view, it remains one of the most poorly known areas in North America..." (Morrison 1987: 49). Does the Mackenzie Valley represent a gradient between two related complexes, is it a distinct region in its own right, or is it more closely related to one or the other of the two complexes making up Late Northwest Interior culture? It is hypothesized that the Taltheilei complex originated in northern British Columbia and moved rapidly to the east following the Peace River and likely the southwestern tributaries of the Mackenzie River. Only substantive archaeological evidence from these two critical regions can throw light on both the extent of regional distinctiveness and the source of the eastern migrations around 700 BC. Why such a migration of people was initiated in the first place poses important questions to archaeologists. Natural causal factors, like volcanic ash falls, cannot be invoked (e.g. Wright 1995: Black and White Plate IX) and thus a cultural explanation must be sought. Did the descendants of Early Palaeo-Eskimo culture abandon their interior caribou hunting grounds for some reason and Late Northwest Interior culture caribou hunters simply fill a void? Or did the Taltheilei complex hunters push the Palaeo-Eskimos out of the barrengrounds and, if so, what was pushing them into such aggressive behaviour? These will be difficult but important questions to be addressed as the archaeological picture is filled in.

There are problems with establishing solid chronologies throughout the western Subarctic. Chronic forest fires cause humus destruction, collapsing accumulated archaeological debris representative of considerable time into single debris layers (Hinshelwood 1996). This not only makes component separation impossible but renders it difficult to impossible to assign charcoal samples for radiocarbon dating to clearly identifiable cultural targets. For example, when Pointed Mountain phase radiocarbon dates in the southwestern corner of the District of Mackenzie range from 4,000 to 400 BP (Morrison 1987: Table 1) one has to ask what is being dated? In some areas, such as the Great Slave Lake and Great Bear Lake region, forest fires of the past have been tabulated (Noble 1974: Table 1) thus potentially providing recognition of the likelihood of contamination of radiocarbon samples from this source. As a rule, "Demonstrations of continuity and change in this zone generally rests on ill-defined sets of horizon-marking stone tools..." (Maxwell 1980: 178). Stone tool assemblages from northwestern North America lack significant standardization (Gotthardt 1990: 270), confounding traditional typological comparative approaches. The application of detailed analyses of the production of expedient flake tools, that will not be affected by the varieties of stone being used or site function (Gotthardt 1990; LeBlanc 1984), holds considerable promise to rectify, at least to some degree, the inherent limitations in the 'finished' stone artifacts. Among these limitations is the fact that "Notched and lanceolate points, notched burins, microblades, tabular and wedge-shaped microcores, and other traits often appear to be distributed in time and space essentially independent of one another" (Morrison 1984: 53).

CHAPTER 30

MIDDLE PALAEO-ESKIMO CULTURE

Précis:

Unlike the case with many of the cultures considered in these volumes, there are a number of readable and informative accounts of Palaeo-Eskimo culture (e.g. Maxwell 1984; McGhee 1996; Schledermann 1990). There is also a recent synthesis of Palaeo-Eskimo archaeology in Greenland that is directly pertinent to Canada (Grønnow and Pind 1996). For a personal account, that provides insights into the problems faced by Arctic archaeologists as well as information on Palaeo-Eskimos, see Schledermann (1996). A useful summary of Middle Palaeo-Eskimo culture (Dorset complex) can be found in Maxwell (1985: chapters 6 & 7). The word 'complex' is used here to designate regional or temporal subunits of Palaeo-Eskimo culture and is regarded as a temporary archaeological classification device that is certain to be subjected to future modification. Terms like Pre-Dorset, Dorset, Lagoon, Independence II, Saqqaq, and Groswater fall into this category. Ongoing archaeological research is revealing that the regional diversity apparent in Middle and Late Palaeo-Eskimo culture was already well in process during Early Palaeo-Eskimo time in Period III (e.g. Sutherland 1996). The most widely known Middle Palaeo-Eskimo complex, Dorset, was first identified from National Museum of Canada specimens (Jenness 1925). It was recognized early that all of the aforementioned complexes were related to the Denbigh Flint complex of Alaska. The Arctic Small Tool tradition is the umbrella cultural classification that encompasses all of the regional and temporal groupings. While a close relationship between Pre-Dorset and Dorset was noted by a number of archaeologists (Collins 1956; Harp 1952; Taylor 1959) it remained for Taylor (1968) to demonstrate the nature of the relationship.

It is necessary to comment on the use of the word 'Eskimo' in Palaeo-Eskimo. I agree with the observation "...that the Dorset population spoke some old variant of the Eskimo language" (Taylor 1968a: 9), a view supported by the oral traditions of the Inuit, more commonly referred to as Eskimos, which state that the Tunit (Dorset) spoke the same language as themselves (Rasmussen 1931: 113-114). Others are not as sanguine regarding the foregoing language association (e.g. McGhee 1996: 41).

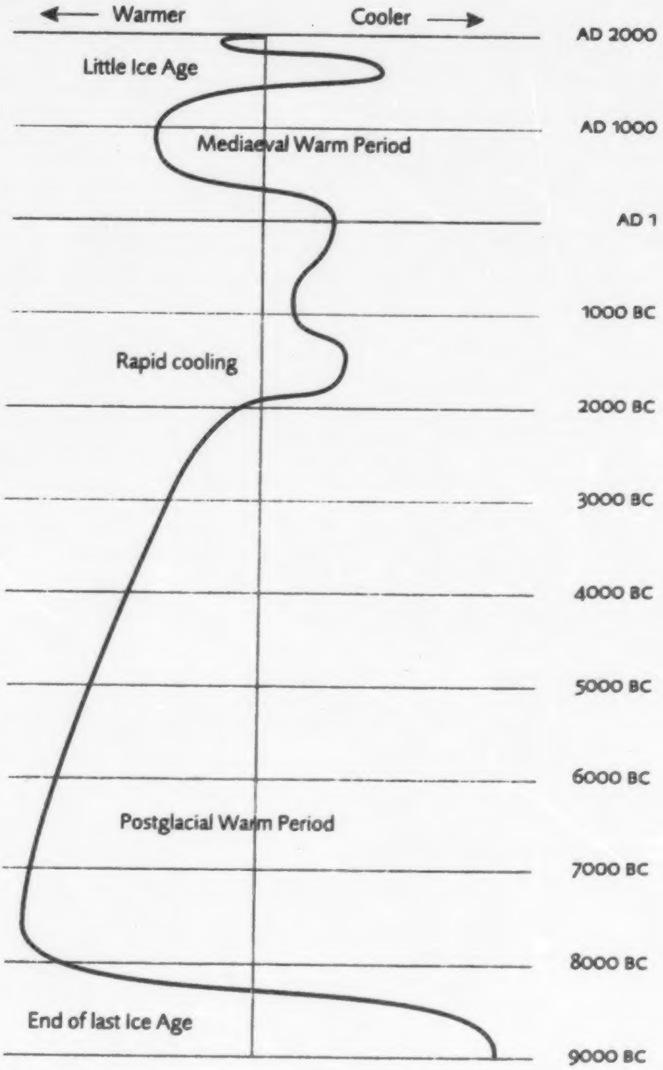


FIGURE 104: CLIMATIC CHANGE SINCE THE LAST ICE AGE Throughout more than two thirds of the time span indicated on Figure 104 the Arctic was unoccupied by humans. It was not until the Palaeo-Eskimos, with their specialized adaptation to the Arctic environment, that people were able to occupy this harsh environment. Even these hardy individuals had to retreat, on occasion, to more favourable climes as circumstances dictated. (Reproduced with permission from McGhee 1996: Figure 6.1).

During most of Period IV (1,000 BC-AD 500) the Eastern Arctic was involved in a cooling trend that began around 2,000 BC (Figure 104). The greatest impact a cooling climate would have had on people was how it influenced sea ice conditions and the pockets of open water called polynyas where concentrations of sea mammals would have been available.

Middle Palaeo-Eskimo culture is used as a rubric for all of the related regional complexes of the Arctic Small Tool tradition dated between 1,000 BC and AD 500. This involves an occupation that extended from the Mackenzie River Delta in the west to Greenland in the east and north to northern Ellesmere Island and south to the Island of Newfoundland. Such an occupational distribution encompasses an east-west span of 3,700 km and a north-south one approaching 4,000 km (Taylor 1968a: 6). Given the variability in physiography, animal resources, and sea ice conditions across this enormous expanse of land and sea considerable cultural variability is to be expected, but always within a broadly shared cultural pattern. In order to identify regional cultural variability within Middle Palaeo-Eskimo culture the local complex involved will be specified. The term 'subculture' for such complexes was used in Volume I but is discontinued here as an unnecessary source of potential confusion. A much expanded data base is going to be required to assess the interrelationships of these complexes to one another and undoubtedly there will be significant classification changes in the future. For example, each complex was undoubtedly composed of a number of independent communities that would have had their own name for themselves and a clear sense of self-identity. Such classificatory fluidity cannot and should not be avoided in a data-driven discipline like archaeology. As a discipline whose classifications are based upon cultural processes, rather than the laws of genetics or physics, archaeology is forced into the situation of having to establish the classifications necessary to control the mass of data but with the realization that these data are always incomplete and must be adjusted with the advent of new information. An increasing interest in Arctic archaeological classification problems should resolve some of the current classificatory difficulties, such as the same site being assigned to different complexes by different researchers.

In addition to complications arising from the relationships between regional variants of Middle Palaeo-Eskimo culture there is evidence that a number of different migrations took place in various places at different times. The antecedents of the Middle Palaeo-Eskimo Groswater complex of northern Québec, Labrador, and Newfoundland, for example, were derived from cultural developments in Ellesmere Island and adjacent Greenland. Colonization of the Hudson Bay region, on the other hand, originated with populations further to the west in the Foxe Basin.

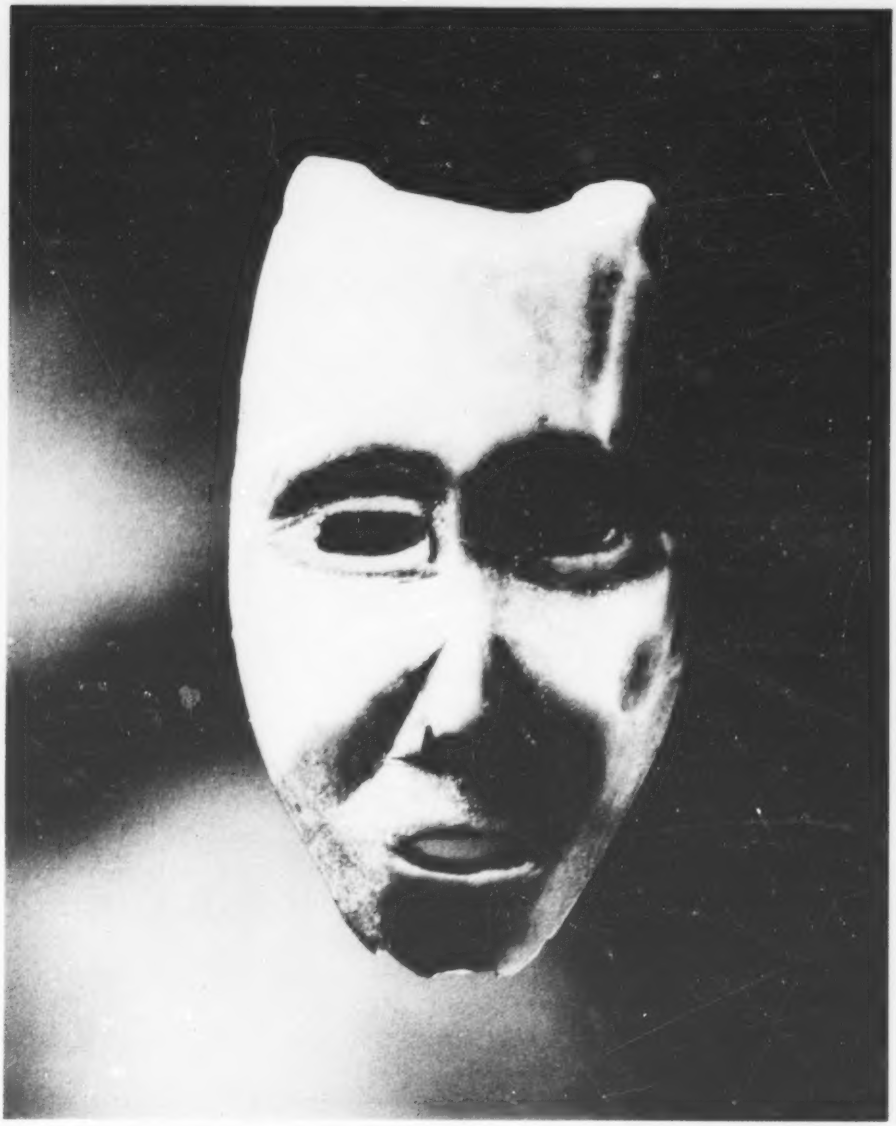
Middle Palaeo-Eskimo culture descended from the Early Palaeo-Eskimo culture of Period III (4,000-1,000 BC). Controversy surrounding the transition of the Pre-Dorset complex into the Dorset complex was considered in Chapter 21 of Volume I (Wright 1995) but the debate continues into Period IV. For example, there is still argument concerning exactly when and how the Pre-Dorset complex became the Dorset complex. In this Chapter the period of the Pre-Dorset transition into Dorset is included in Middle Palaeo-Eskimo and, thus, begins at 1,000 BC rather than 500 years later as many would advocate for the beginning of Dorset (McGhee 1996). Differentiation of the two complexes has been mainly based upon the presence or absence of certain technological elements, with a clear emphasis being placed upon the differences rather than the similarities. A number of assumptions of a questionable nature have been made regarding the relationship between the two complexes, such as the suggestion that Early Palaeo-Eskimos had the bow and arrow but that Middle Palaeo-Eskimos abandoned the weapon system. Another assumption is that all Palaeo-Eskimos lacked the technological capabilities to capture large sea mammals from boats. This appears to have been mainly based on the absence of later Inuit specialized whaling gear that survives archaeologically. Large whale remains are occasionally recovered from Middle Palaeo-Eskimo sites but are assumed to have been the result of people scavenging the bodies of stranded whales. The accuracy of this assumption has been questioned by the evidence of large whale hunting at the late Period III Saqqaq complex site of Queqertasussuk in western Greenland (Grønnow 1994: Table 1). It is necessary to accept the fact that many elements of ancient technologies are archaeologically invisible. There is no doubt that a reliance on the rich ethnographic documentation of Inuit technology and lifeways has influenced interpretations of Palaeo-Eskimo technology, especially when it deviates from the Inuit norm. Such a one-to-one assumption contains many pit-falls.

A major difference between the Early Palaeo-Eskimo of Period III and the Middle Palaeo-Eskimo of Period IV was the abandonment by the latter of formerly occupied territories in the interiors of northern Alaska and the barrengrounds of Keewatin and Mackenzie districts in the Northwest Territories (McGhee 1987). This shift in settlement strategy away from the interior suggests a reduced focus on caribou and a concentration on sea mammal hunting. Indeed, the transition into the Dorset complex has been regarded as a direct product of an adaptation to the advantages of greater sea ice coverage resulting from climate change.

A central tenant of Eastern Arctic archaeology during Period IV and later is that a central core area, represented by Hudson Strait, the Foxe Basin, and the Baffin Island region, was continuously occupied and functioned as a launching pad for population migrations to more remote regions as well as a place to retreat to during unfavourable situations. While the concept still has some utility, it appears to be an over-simplification of events. Other core areas, such as the High Arctic and northern Greenland, Labrador, and the Central Arctic, existed for considerable periods of time and interacted with one another as well as the Core area. Interaction, however, was variable in intensity. For example, it now appears that the earliest Middle Palaeo-Eskimos of Labrador and Newfoundland had more in common with people in the High Arctic, adjacent Greenland, and most of northern coastal Québec than they did with people in the Core area proper.

The Arctic Small Tool tradition (Irving 1957), of which Middle Palaeo-Eskimo culture represents a segment of the eastern branch of the tradition, was well-named. Stone tools are typically minuscule in size and maintain an exceptionally conservative adherence to culturally approved stylistic models. Tools were also fashioned with meticulous care. A wide range of burin varieties are represented, most with ground working edges unlike the burin blow sharpened implements of Period III. Burins appear to have served a wide range of cutting, gouging, and etching functions and, as they were always fashioned from very hard stone like chert and nephrite, were ideally suited for fashioning implements and ornaments out of ivory, antler, and bone. Microblades may or may not be present or abundant on Middle Palaeo-Eskimo sites. On sites with wood preservation, microblades have been found hafted in wooden handles. Their main function would have been as knives for cutting-up hides for clothing and for slicing meat. Points are generally assumed to have tipped toggling harpoon heads rather than arrow shafts but this assumption is questionable. Chipped side blades were fitted into slots along the sides of bone and antler lances, harpoons and, on rare occasions, arrows. Ground slate points and knives become common and are frequently side-notched like many of the chipped stone points. There is a wide range of scraper, knife, and chipped adze forms, the latter generally ground only at the bit. Important bone and ivory implements are needles with gouged-out rather than drilled eyes and a range of toggling harpoons, the latter being particularly useful as horizon markers. Some of the ivory and antler harpoons were tipped with chipped or ground stone points while others were self-armed in the sense that their piercing tips were simply ground to a sharpened point. Thanks to permafrost conditions, wood preservation occurs at some sites where items like handles for stone burins and microblades and boat and sled parts have been recovered. Art objects in ivory, bone, antler, wood, and soapstone are present in increasing numbers but do not achieve the degree of florescence apparent during Period V. The first detailed quantitative and qualitative descriptions of Early and Middle Palaeo-Eskimo tool kits were done by Taylor (1968) in his effort to demonstrate technological continuity between the Pre-Dorset and Dorset complexes.

Regional complexes of Middle Palaeo-Eskimo culture have been identified mainly on the basis of their tool kits. This not only applies to Middle Palaeo-Eskimo culture but also to the preceding Early Palaeo-Eskimo culture. Thus, during Period III



BLACK AND WHITE PLATE XXXX: THE TYARA MASKETTE This tiny 2 cm wide ivory maskette was discovered at the early Dorset site ofTyara on Sugluk Island off the northern coast of Québec in Hudson Strait. Such items are regarded as being part of a shaman's paraphernalia, possibly representing ancestor spirit-helpers.

(4,000-1,000 BC) "In the North American Arctic, the early ASTt is represented by the Proto-Denbigh and the Denbigh Flint complex in Alaska, the Independence I complex found primarily in the Canadian High Arctic and northern Greenland, the Saqqaq complex, found primarily in southwest and southeast Greenland and the Pre-Dorset and Dorset complexes generally found in the Canadian central and eastern Arctic regions, including Labrador and Newfoundland" (Schledermann 1990: 20). Regional differentiation appears to increase during Period IV with such complexes as the Lagoon complex in the Central Arctic and the transitional Pre-Dorset, Independence II, late Sarqqaq, Dorset I, and Groswater complexes to the east. As with Period III, however, the similarities between these regional complexes exceed their differences.

There was a significant subsistence shift from Period III to Period IV with Middle Palaeo-Eskimos of the latter period abandoning former interior hunting territories and focusing on sea ice hunting of sea mammals (Maxwell 1980a: 170). Terrestrial animals were still important but more as a supplementary resource than a primary one. Colder climate is speculated to have reduced the availability of caribou. Also, marine mammals tend to be a more dependable food source although their availability is affected by sea ice conditions. As Middle Palaeo-Eskimo culture occupied over 1,500,000 square kilometres of quite variable landscape, extending from the Mackenzie River Delta across Arctic Canada into Greenland and south along the Labrador coast onto the Island of Newfoundland, the animal resources and the methods necessary to capture them would also have been variable. Despite regional differences in resource availability and seasonal emphases on specific prey animals, like caribou, seal appear to have been the mainstay of sustenance throughout the entire region.

Concomitant with a concentration on sea mammal hunting was a natural settlement pattern shift onto the coast and away from earlier interior settlements. This is one of the outstanding characteristics of the Period IV occupation of the Arctic. Many sites are situated within easy distance of the sea-ice interface with its sea mammal concentrations. A major problem facing a fuller understanding of settlement patterns is the likelihood of winter settlement on the sea ice in igloos. Such winter settlements would be ideally suited for purposes of either flow edge or seal breathing hole hunting. The possibility of winter sea ice settlement was raised for Early Palaeo-Eskimo culture in such places as the Central Arctic where winter occupation sites on land appear to be missing (Wright 1995: 435). Of course, all evidence of winter sea ice occupation would disappear each year along with the ice. There are also problems with both acquiring faunal samples and drawing inferences on sustenance from them. Large animal bones, for example, were used as fuel and, given the climate and availability of permafrost or snow banks in the summer, foods could be readily cached for winter consumption. Thus, a concentration of aquatic bird remains on a site need not indicate a summer occupation when the birds would have been available but, rather, could represent other seasons of the year when cached bird carcasses were being consumed. In many instances site locations are likely a more reliable indicator of season of occupation than recovered animal remains.

Middle Palaeo-Eskimo dwellings range from tent rings and semi-subterranean rectanguloid structures to dwellings with axially aligned hearth-work areas and adjacent sleeping quarters to either side; the latter being most characteristic of the High Arctic, northern Greenland, and Labrador-Newfoundland.

Middle Palaeo-Eskimo shamanism is undoubtedly reflected in the mainly naturalistic carvings in ivory, antler, bone, soapstone, and wood. A number of these objects may also have functioned as personal amulets. While such art had its beginnings in Period III and became increasingly common in Period IV, it was not until Period V (AD 500-European contact) that they achieved the peak of their development. In addition to animal and human forms other relatively common objects are containers for shaman paraphernalia carved from walrus tusk and miniature toggling harpoons. Some stylistic correspondences in the art forms exist with the Okvik and Ipiutak complexes of the Bering Strait region of Alaska. The petroglyph sites on the Québec side of Hudson Strait cannot be dated but on stylistic grounds should pertain to Period IV. Not only archaeologists but art historians have been fascinated by Palaeo-Eskimo art (e.g. Taylor and Swinton 1967). Indeed, it has elicited the observation that "The importance of magico-religious beliefs and their association with Dorset technology is apparent in the most striking accomplishment of the Dorset people: the creation of a body of art that is unique, unexpected, and remarkable" (McGhee 1996: 148).

Evidence of Middle Palaeo-Eskimo burials is extremely rare, coming mainly from vandalized crevice burials in the limestone cliffs of Newfoundland. A few more northerly sites have produced occasional human remains. For some unexplained and presumably symbolic reason these remains are often represented by mandibles. Dog remains are equally rare. Possibly dogs were accorded similar treatment as humans; probably exposure or placement on the sea ice. Physical anthropological studies of the limited evidence attribute the individuals to a northern Mongoloid racial stock to which the present Inuit people belong.

It has been popular to consider Middle Palaeo-Eskimos as being isolated in their Eastern Arctic homeland. There is clear evidence, however, of influences coming from related peoples in Alaska. Middle Palaeo-Eskimo depopulation of the Labrador coast around AD 200 has been attributed to Indian intrusions to the coast as well as to natural disasters (Tuck 1976: 101). Direct evidence of Indian-Middle Palaeo-Eskimo contact, however, is lacking and indeed, "The overall conclusions regarding Dorset-Indian contacts in Labrador must be that there is very little evidence to suggest that it occurred..." (Fitzhugh 1980: 29).

The highly mobile, small family groups composing Middle Palaeo-Eskimo society were likely organized into local bands which, in turn, would be related by blood to neighbouring bands. Given the necessity for people to find food and that prey animals can be affected by natural and not totally predictable circumstances, considerable mobility can be anticipated including occasional long distance population shifts. Such moves, however, were likely in conjunction with other groups and thus a mutual support system would still be in place. Throughout most of the year it can be anticipated that the nuclear family was the major social unit and that two or three such families either moved together or were in close proximity to one another. At favourable times of the year, such as during the fall char (*Salvelinus alpinus*) spawning runs in lakes and rivers or near a summer bird rookery, a number of these family groups could come together to reaffirm their social identity, arrange marriages, perform ceremonies, and exchange information and gossip.

To judge from the nature of the Middle Palaeo-Eskimo tool kit and, indeed, that of all Palaeo-Eskimos, it can be inferred that the people placed a high value on tightly constrained behaviour. There was only one way to do something and that was the Palaeo-Eskimo way. In this respect, there appears to have been little tolerance of idiosyncratic behaviour, even in terms of tool production. It has been suggested that the Middle Palaeo-Eskimo obsession with ultra conservative ways of doing things may have been largely responsible for their disappearance as a recognizable cultural entity when the ancestors of the Inuit occupied their territories around the beginning of the 10th century (Nash 1976: 155).

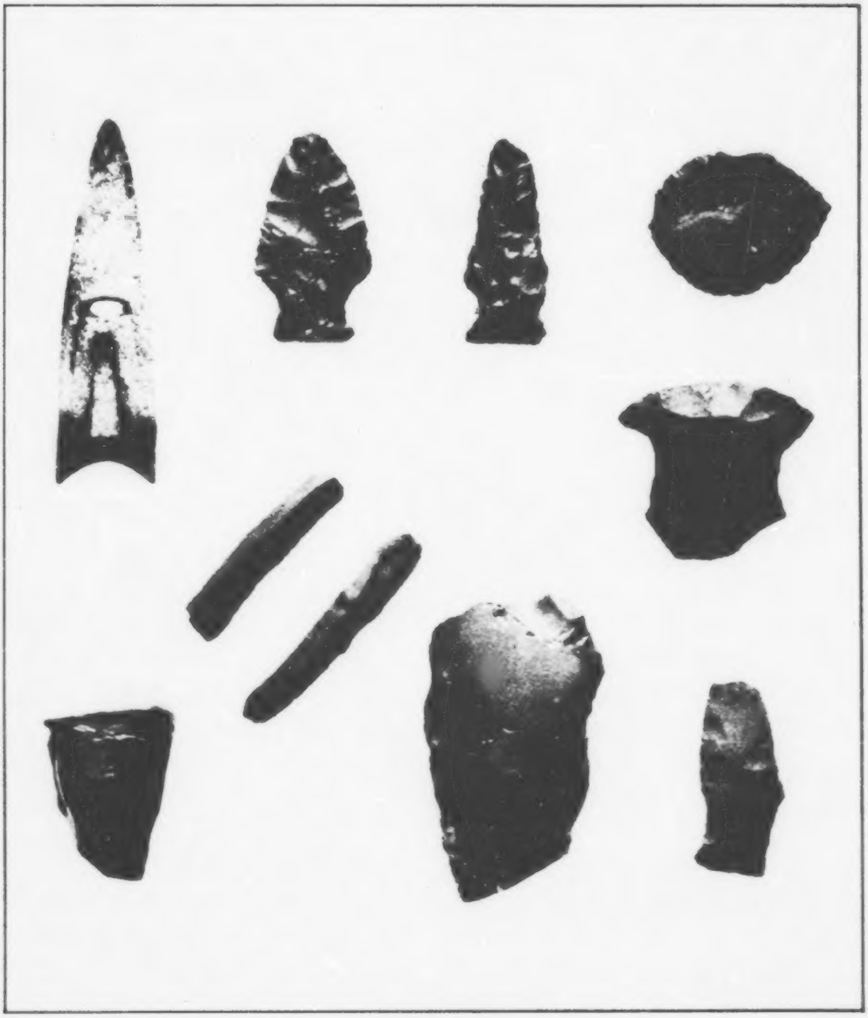
Limitations in the archaeological evidence are much the same as elsewhere in Canada, such as a scarcity of detailed published regional accounts, component mixture due to repeated occupations of the same sites, and so forth. There are, however, two circumstances largely unique to the Arctic; the probability of archaeologically invisible winter settlements in snow houses on the sea ice and, as a degree of compensation for the former, the visibility of archaeological remains from the air. As the Inuit of Period V, with their highly visible large stone, whale bone, and sod winter dwellings, frequently occupied the same sites as Palaeo-Eskimos aerial survey will accidentally lead to the discovery of the earlier occupations. It has been suggested that Arctic archaeology "...shares certain patterns with mythological belief: acceptance of prior authority, intolerance of alternative views, and a search for simple explanations for complex phenomena" (McGhee 1983: 21). There has also been a tendency to assume that the absence of direct archaeological evidence of a technological or cultural element equates with an actual absence. This has been the basis for questioning the existence of elements of technology such as kayaks, umiaks, snow houses, dog traction, and the bow and arrow. In other words, there has been an over reliance on Inuit ethnographic analogy and the tacit assumption that it can be applied to Palaeo-Eskimo technology. As recent ethnographic studies amply demonstrate, there are numerous ingenious ways that people have been able to achieve their ends without leaving any archaeological record.

Cultural origins and descendants:

Middle Palaeo-Eskimo culture developed out of the Early Palaeo-Eskimo culture of Period III. A key concept concerning cultural developments during Period IV is that of a Core area, within which an unbroken Palaeo-Eskimo occupation spanning Period IV and portions of Periods III and V, has been recorded. This Core area is purported to have been surrounded by peripheral regions that were, in contrast, only periodically occupied (e.g. Fitzhugh 1976a: 139). Relatively stable sea ice conditions in the Core area surrounding the Foxe Basin is believed to have permitted continuous human occupation from which migrations into marginal areas could be launched or, conversely, to which marginal populations under stress could retreat. While still of some utility, the concept of a single core area, to which all peripheral occupations were somehow attached, is too simplistic. A major limitation is that the core construct is based upon current archaeological knowledge which is far from being complete. The numerous variables influencing food availability, even in the hypothesized Core area, as well as the level of mobility apparent in Palaeo-Eskimo culture, requires a broader and more detailed data base in order to effectively evaluate the demography of a core area versus peripheral areas (Schledermann 1978a: 43-44). It is also likely that in many areas "...a very diffuse demographic settlement pattern" (Ibid: 45) prevailed. Thus, the "core-pulsation model" is not appropriate to all areas of the Arctic (Sutherland 1996). The concept needs to be expanded to include other regions with long records of Palaeo-Eskimo occupation. As has been noted, "The probability of many coeval population centers, equally viable, may account for multidirectional information transfer rather than unidirectional diffusion from a center to a periphery" (Maxwell 1980a: 169). For the various groupings of Palaeo-Eskimo people regional cultural variability is being increasingly recognized as "...a mosaic of small named local groups of a few hundred people, each sharing most characteristics with adjacent groups, and each changing along its own trajectory over time" (Sutherland 1996: 287). Recent research on the Island of Newfoundland, for example, has identified contemporary Dorset people on the northwestern, northeastern, and southern coasts of the Island as all representing semi-discrete populations (Robbins 1986: 122). While culture contacts did exist between regions they were far more intense within regions.

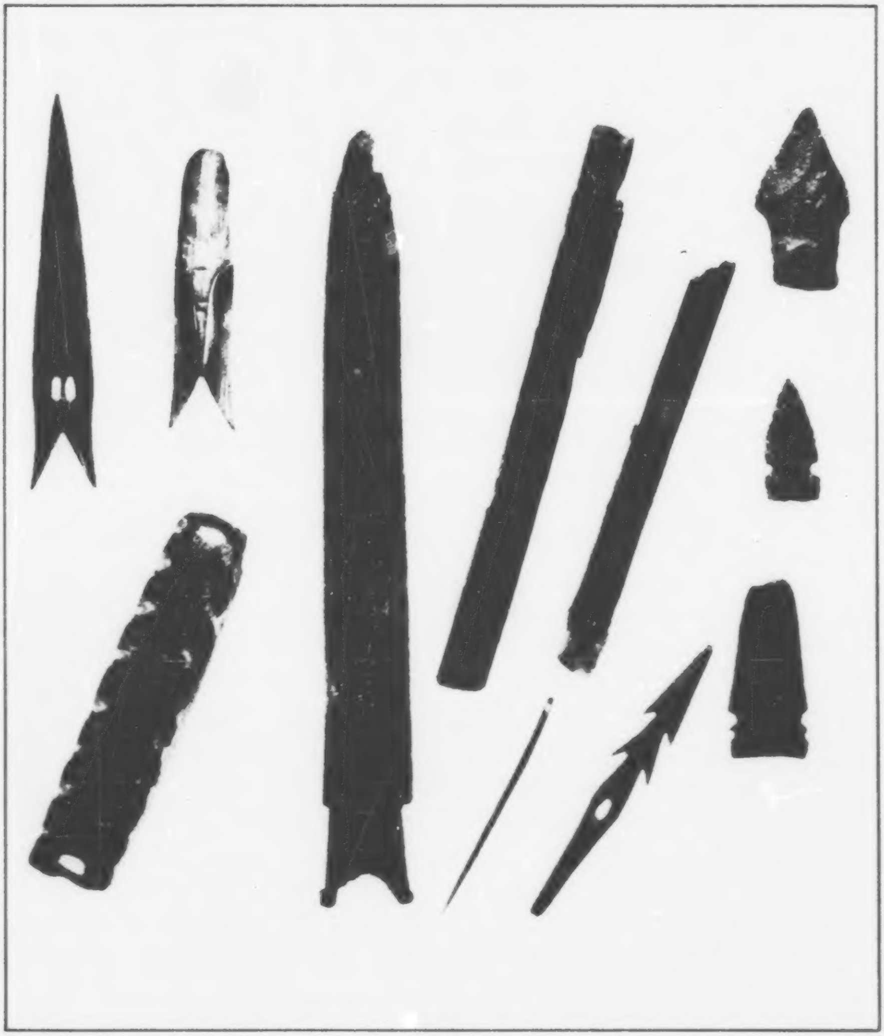
With reference to chronology, beach elevations above sea level do allow some demarcation of time but the dating method is not sufficiently specific to permit site dating by elevation alone (Andrews et al. 1971). Radiocarbon dating of Arctic sites poses a host of problems, such as differences between the atmospheric and marine carbon reservoirs, old drift wood, and sample contamination. Typological dating of sites also encounters problems. While the Middle Palaeo-Eskimo tool kit is quite elaborate, particularly when there is bone preservation, it has been appropriately observed with reference to the Pre-Dorset to Dorset transition that the "...transition occurred in different places, perhaps during slightly different time periods, resulting in regional expressions which may or may not conform completely to what we stereotypically think of as "true" Dorset" (Schledermann 1978: 473). Even during Period III there was considerable Early Palaeo-Eskimo technological variability reflected at sites in the Central Arctic, the Eastern Arctic, the High Arctic, Greenland, and down the Labrador coast, all with overlapping spheres of influence (Schledermann 1996: 43; Sutherland 1996). As an example, the High Arctic and northern Greenland Independence II complex of Middle Palaeo-Eskimo culture is considered to be a product of the blending of the terminal Pre-Dorset and Saqqaq and early Dorset complexes with the preceding Independence I complex (Schledermann 1996: 76). Blending of traits characteristic of the various regional and temporal complexes has certainly complicated cultural classifications. In the Central Arctic the early phase of Middle Palaeo-Eskimo development during Period IV is known as the Lagoon complex (Arnold 1981; LeBlanc 1994) which stemmed from Period III local cultural roots (Pilon 1994). Eastern traits in the Lagoon complex are attributed to diffusion and not migration (LeBlanc 1994: 115), a circumstance that is also used to account for certain Alaskan traits in the bone technology. There are no known local descendants of the Lagoon complex but such may eventually be discovered on Victoria Island. Similar cultural continuity has been recorded in northwestern Alaska, spanning 2,200 BC to AD 800 and involving a sequence from the Denbigh Flint Complex to Choris to Norton-Near Ipiutak to Ipiutak (Giddings and Anderson 1986: 292-293). For an outline of the culture changes involved in the Alaskan sequence pertinent to Middle Palaeo-Eskimo culture see the preceding reference and particularly Chapter 15. In Labrador and the Island of Newfoundland there is disagreement whether the Dorset complex developed out of the earlier Groswater complex, replaced it, or represents an amalgam of two different populations of Palaeo-Eskimos. The Groswater complex is a transitional phase between Pre-Dorset and Dorset and, in this respect, is a regional equivalent of Independence II, late Saqqaq, and Dorset I (Renouf 1994).

At Ashton Bay on Somerset Island in the Low Arctic portion of the Eastern Arctic, separated from the High Arctic by Lancaster Sound, neither the Independence I and Pre-Dorset complexes of Period III nor the Independence II and Dorset complexes of



‘A’

BLACK AND WHITE PLATE XXXXI: MIDDLE PALAEO-ESKIMO IMPLEMENTS
implements. There is some agreement that during the original colonization of the Arctic a
lapping distributions of Independence I in the High Arctic, Saqqaq in Greenland, and Pre-
complexes. While the Independence II complex is regarded by some as being distinct from the
of the degree of technological relationship between these various complexes through both time



'B'

Frame 'A' illustrates Independence II complex implements and Frame 'B' Dorset complex number of eastwardmoving people were involved and this is reflected in the marginally over-Dorset to the south. Middle Palaeo-Eskimo complexes developed out of these earlier regional Dorset complex, it is acknowledged that it also had a close relationship with Dorset. Clarification and space is a major task facing Arctic archaeologists.

‘A’

The following Independence II complex implements are illustrated: in the upper left-hand corner, a bone toggling harpoon; to the upper right, two side-notched points and/or knives; in the upper right-hand corner, a large chipped side-blade that would have been inserted into a bone or ivory weapon; below it, a typical end scraper form; in the lower left-hand corner, a microblade core and above it and to the right, two microblades; in the middle lower position is a ground stone adze; and to its right, a ground burin implement. (Reproduced from McGhee 1978: Plate 6 - Scale: variable).

‘B’

The following Dorset complex implements are illustrated: in the upper left-hand corner are two toggling harpoons that are the only two items on the Plate that pertain to Late Palaeo-Eskimo rather than Middle Palaeo-Eskimo (Dr. Robert McGhee, Archaeological Survey of Canada, Canadian Museum of Civilization: personal communication); to their right is a bone lance lacking its stone piercing tip and possible side blades; to its right are a microblade with a bone backing element hafted in a wooden handle at the top and a ground burin hafted into a similar wooden handle at the bottom; along the right-hand side of the illustration are three varieties of points with the bottom most being of ground slate; in the lower right-hand corner is a fish or bird dart and an eyed bone needle; and in the lower left-hand corner is an ivory ice-creeper or crampon that would have been lashed onto the boot in order to traverse smooth ice. (Reproduced from McGhee 1978: Plate 9 - Scale: variable).

Period IV, respectively, could be separated from one another (Bielawski 1988: 62). In contrast, in the Port Refuge area of west Devon Island immediately to the north not only were the Independence I and Pre-Dorset complexes of Period III isolated from one another but the subsequent Period IV, Independence II complex, dating to 500 BC, is simply described as having early Dorset flavours (McGhee 1981a). In fact, the entire North Devon Lowlands, including Bathurst and Cornwallis islands, is regarded as a local cultural development with relatively good regional cultural continuity but with eastern diffused elements (Helmer 1991; Schledermann 1978a). A similar situation is seen to exist further north in the High Arctic on Ellesmere Island (Schledermann 1990). It appears that both during the transition and in early Dorset complex times "...a more or less continuous exchange of traits and probably populations took place between the Central, Eastern and High Arctic regions..." (Schledermann 1990: 175) followed by an abandonment of the High Arctic that lasted for more than 1,200 years. The region was not to be reoccupied by Late Dorset culture from the south until around AD 800 during a climatic amelioration (Ibid: 201).

It was once proposed that in northern Labrador and adjacent northern Québec the transition out of the Pre-Dorset complex led to the Groswater complex of 1,500 to 600 BC, followed by a Core area Dorset occupation from 600 BC to late into Period V (Cox 1978).The Groswater complex, however, has many trait correspondences with the Independence II complex. Uncertainty of how the classify the assemblage led to it initially being called Dorset and then Pre-Dorset (Tuck and Fitzhugh 1986). It is now suggested that a migration, originating from the area of northern Hudson Bay around 600 BC, replaced or absorbed the Groswater complex (Fitzhugh 1980: 23) although this scenario is not accepted by all. The same group of migrants are stated to have eventually occupied the entire coast of the Island of Newfoundland. While it has been proposed that "...the Newfoundland regional variant of Dorset culture developed because of cultural isolation in a geographically peripheral location, with regard to the Dorset culture area" (Linnamae 1975: ii), Dorset sites on the Island do contain Groswater traits and it appears that contacts were maintained with the Labrador coast as well as the northshore of the Gulf of St.Lawrence (Fitzhugh 1980; Tuck 1978a).

From the foregoing it is apparent that early in Period IV there were a number of different regional cultural divergences and/or migrations involving the Central Arctic, western Greenland, and Labrador. It is further apparent that the transition from Early to Middle Palaeo-Eskimo culture around the beginning of Period IV was a far more complex process than simply being an offshoot of a single Core area (e.g. Cox 1978; Maxwell 1985; Schledermann 1990).

Dating the transition of Middle Palaeo-Eskimo from Early Palaeo-Eskimo is a matter of some debate and in this Chapter it is set, not entirely arbitrarily, at 1,000 BC. This early date is arrived at by including the transitional period in Middle Palaeo-Eskimo culture. It is once again emphasized that calendrical dates are a calibrated estimate of converted radiocarbon dates following Klein et al. 1982 and, thus, are somewhat earlier than such dates achieved by the erroneous process of subtracting the radiocarbon date from the year AD 1950 to attain a calendar equivalent. When radiocarbon dates are limited to land mammal bone and scrub willow charcoal and are then calibrated for fluctuations in atmospheric C#14, Period IV essentially pertains to what is classified here as Middle Palaeo-Eskimo culture. Whether the transition between Early Palaeo-Eskimo and Middle Palaeo-Eskimo was sudden or gradual is also a matter of some argument (e.g. see Maxwell 1985 and Meldgaard 1962 in contrast to Nagy 1994). A major listing of radiocarbon dates and a discussion of the problems of dating organic materials from the marine reservoir can be found in McGhee and Tuck (1976). Additional dates are available in Cox 1978, Harp 1976, Maxwell 1985, Taillon et Barré 1987, Renouf 1994, Schledermann 1978a, 1996, Wilmeth 1978, as well as other publications.

As a final comment on **cultural origins and descendants**, the suggestion that somehow Middle and Late Palaeo-Eskimos 'smell of the woods' and owe the genesis of much of their tool kits to influences from the southern forests (Meldgaard 1960; 1962) was put to rest long ago by Taylor (1968: 94-98). This hypothesis stands as an example of the hazards of tracing cultural relationships on the basis of isolated traits rather than the comparison of total assemblages and their associated cultural subsystems.

Technology:

The major characteristics of Middle Palaeo-Eskimo culture (Dorset) have been described as follows: coastal settlement; importance of toggling harpoons; dominance of sea mammal hunting although land mammals, fish, and birds seasonally important; soapstone lamps; ice creepers and snow knives; small hand-pulled sleds; art dominated by sea mammal forms, particularly the polar bear; skin covered boats; and semi-subterranean dwellings with sleeping benches, skin tents, and likely the igloo. All of the foregoing cultural elements reflect an Inuit way of life. Exceptions to the foregoing statement are the suggested absence of dogs, whaling, the bow and arrow, and the bow drill (Taylor 1968: 87-88). It now appears, however, that only the bow drill was absent from Middle Palaeo-Eskimo culture but, even here, not in all instances. The presence of some items of technology can be difficult or impossible for archaeologists to determine with certainty. During Period III, for example, it was suggested on the basis of the absence of stone oil lamps that Early Palaeo-Eskimos lacked this critical source of heat and light. The identification of grease-saturated soil in the hearth areas of Early Palaeo-Eskimo dwellings in the High Arctic, however, likely indicates the use of oil burning lamps using containers or systems that either do not survive or are not recognizable in the archaeological record. Support for such a suggestion comes from the concentration of tool manufacturing and repair activities adjacent to the hearths, close to a source of light and heat (Schledermann 1990: 47). It is possible that leather containers lined with fire resistant sand could have performed the same function as later stone oil lamps. In a culture where it can be assumed that a large segment of the technology would have been based upon perishable hide and sinew it is hazardous to equate an archaeological absence of certain elements of technology with an actual absence. This is certainly an area where experimentation could shed considerable light. Recycling of certain products could further blur the technological picture. The abandonment of the bow and arrow in Period IV has been based upon the absence of wooden arrow shafts from sites where wood is preserved. But broken wooden arrowshafts could have been either abandoned at caribou kill sites or recycled as handles for stone tools and kindling. A number of similar questionable assumptions that have been used to distinguish between Middle Palaeo-Eskimo and Early Palaeo-Eskimo, as well as later cultures, are considered here.

The once supposed absence of domesticated dogs in Palaeo-Eskimo culture (e.g. Bielwaski 1988: 69) has been altered by their discovery at the Early Palaeo-Eskimo Qeqertasussuk site in western Greenland (Grønnow 1994), and Middle Palaeo-Eskimo sites such as Crane in the Central Arctic (LeBlanc 1994: Table 9) and Nanook on southern Baffin Island (Maxwell 1973: Appendix I). The latter dog has been described morphologically as being a large, modern Eskimo dog. While dog remains are admittedly scarce, their very presence is evidence of a number of animals. Perhaps dog remains are scarce because they were treated in a similar fashion as that of their human owners, a not uncommon trait in many cultures around the world. Dogs would have been an invaluable asset in attacking or defending against polar bears and in the location of seal breathing holes on the sea ice. Further, the absence of later Inuit style dog harness paraphernalia, which survive archaeologically, does not necessarily mean that equivalent harness was not manufactured in leather by Middle Palaeo-Eskimos. Thus, the assumption of a lack of dog traction may not be fully warranted and thus the associated assumption that Palaeo-Eskimo sleds were only hand-pulled. Something like a leather dog harness would be very prone to recycling.

The proposed abandonment of the bow and arrow weapon system in Period IV and V is unlikely. Virtually all of the chipped and ground points, assumed to have armed toggling harpoons, could also have functioned effectively as arrowheads or, for that matter, dart heads. Wooden bow parts and arrowshafts have been recovered from the Tanfield site in southern Baffin Island (Maxwell 1973: 165) and, near the end of Period III at the Quqertasussuk site in western Greenland, evidence of sinew-backed composite bows has been uncovered (Grønnow 1994: Figure 27). At the Lagoon complex Crane site in the Central Arctic a scarcity of bone arrows and lances led to the observation that "Perhaps many of the side-notched end-blades were used as arrow projectile points, rather than as harpoon end-blades" (LeBlanc 1994: 110). Composite bone arrowheads with chipped stone side blades have been recovered from the 2,000 year old Joss site on Victoria Island (McGhee 1971) as well as on the adjacent Banks Island (Arnold 1980). While the side-notched points with plano-convex crossections and unifacial basal thinning of the Groswater complex in Labrador and Newfoundland do appear to have been specifically fashioned to be inserted in the end of a slotted harpoon (Renouf 1994) the earliest Groswater points, dating to around 900 BC, are symmetrical (Auger 1986: Figure 1) and could have functioned as arrowheads.

An early surmise that Middle Palaeo-Eskimos possessed skin boats (Taylor and Swinton 1976: 6) has been borne out by direct evidence (Mary-Roussellière 1979; Maxwell 1985: 137). It has even been speculated that the umiak, the large open skin boat of the Inuit, was in existence as well as possible large whale hunting (Mary-Roussellière 1976: 54). Bones of large whales are rarely found on Middle Palaeo-Eskimo sites and the few recovered could have been scavenged from stranded whales. On the other hand, the number of large whale remains from the late Period III Quqertasussuk site in western Greenland (Grønnow 1994: Table 1) would seem to be excessive in terms of whale strandings and leaves the matter of large whale hunting, at least in Greenland, an open issue. Species recovered from this site, with its frozen deposits and near total preservation of organic matter, included the following: sperm whale (*Physeter macrocephalus*); minke or sei whale (*Balaenoptera acuto-rostrata/-borealis*); and bowhead or right whale (*Balaene mysticetus/glacialis*). Killer whale (*Orcinus orca*), the largest member of the dolphin family, is also recorded. Of course, as in the Subarctic, boats of any description are unlikely to survive in most archaeological sites.

Interestingly, and with rare exceptions (Grønnow 1994: Figure 27; Linnamae 1975:12), the spearthrower has not been considered a part of the Palaeo-Eskimo weapon system. Maxwell (1984: 368) does mention "...hooked implements possible for spear slings" from Victoria Island. A 12 cm long antler hooked implement from the Period III Umingmak site (Taylor 1967: Figure 11g) likely represents a spearthrower butt hook. Other lines of indirect evidence suggest the presence of this very useful and powerful weapon system. At the Tyara site, off the north coast of Québec, a chipped point tip had broken off in a walrus rib. The weapon would have had to pass through 1.25 cm of tough hide, 15.25 cm of fat and muscle, and 1.25 cm of bone. The depth of penetration led to the suggestion that the tip was part of "...a heavy thrusting spear" (Taylor 1968: 78). A missile launched from a spearthrower could certainly attain such penetration and would be a far safer weapon than a hand held lance when dealing with a dangerous animal like a walrus. At the early Dorset T-3 site, on the south coast of Southampton Island in the northern end of Hudson Bay, bird bones were exceptionally abundant as were barbed bone darts (Collins 1957) suggesting the use of spearthrowers to propel bird darts. Palaeo-Eskimo people and the later Inuit had a particularly dangerous animal to contend with; the polar bear (*Ursus maritimus*). People and bears frequented the same locations in search of food. Thus, there would have been frequent unavoidable encounters. Polar bears have been known to stalk humans and prior to the rifle may have been less intimidated by the presence of people than they are today. Even now they still pose a potential danger for archaeologists (see Schledermann 1996). In facing a predator that can weigh up to 700 kg (Banfield 1974: 311) a hunter would need all of the advantages possible. Dogs would have been an invaluable asset to hold the bear at bay while the hunter manoeuvred for a shot or thrust. Spearthrowers, with their powerful propelled spears, would have been superior to the bow and arrow as a killing weapon. Presumably heavy lances would have also been used.

Snow goggles or some equivalent would have been required by hunters in order to avoid snow blindness due to the sun rays reflecting off the sea ice. Two plates of thin bone with narrow slots cut through them from the Gargamelle Cove burial 2 site may represent the two eye pieces of a composite snow goggle (Harp and Hughes 1968: 10-11). Of course, snow goggles could have been manufactured from perishable materials like hide and wood. Model wooden sleds from a southern Baffin Island site suggest that the full size sled was between 1.85 and 2.4 m long with four to five cross slats (Maxwell 1985: 153).

A few insights are possible regarding Middle Palaeo-Eskimo clothing. At the Nanook site on southern Baffin Island a sealskin boot, following a process of manufacture still used by the local people, was recovered from the frozen deposits (Maxwell 1973: 158). Wooden and soapstone figurines have been found depicting individuals wearing a double parka, trousers, high boots, all typical of later Inuit, but with an atypically high collar rather than a parka hood (e.g. McGhee 1996: Plate 2).

Most of the so-called distinctive technological traits in Middle Palaeo-Eskimo actually have antecedents in Early Palaeo-Eskimo. These include the Alaskan derived ground slate, multiple side-notched knives and points, ground burins, tip fluted triangular points, etc. One distinct difference was the nearly total abandonment of the bow drill during Period IV. This likely accounts for the change from needles with round crossections to ones with flat crossections where gouged eye holes replaced the earlier drilled eye holes. To discard such a useful manufacturing element of technology as the bow drill is not practical and was more likely related to "...ideational reasons than to purely functional causes" (McGhee 1996: 144). There always seems to be exceptions to any generalization, however, and the eye holes of the bone needles from the Lagoon complex Crane site in the Central Arctic were drilled (LeBlanc 1994). Tip fluted chipped triangular points are only characteristic of certain regions of Middle Palaeo-Eskimo culture. Dorset complex sites along the west side of Ungava Bay in Québec, for example, produces few such points and yet they are common only a short distance to the east in northern Labrador (Plumet 1980: 236; Tuck 1976a). They are absent, however, from the preceding Groswater complex in Labrador (Fitzhugh 1976: 114). These distinctive points are common on early Dorset complex sites on Southampton Island (Collins 1975), the Igloolik area on the northern end of the Melville Peninsula (Meldgaard 1960: 592), and elsewhere. Tip fluted points are particularly common on the Island of Newfoundland. For an good description of the unique method of sharpening the piercing edges of a stone weapon tip by the method of fluting see Meldgaard (1960).

While there is clear cultural continuity from Period III to Period IV there are some changes in emphases in the latter period. Chipped burins are gradually replaced with ground ones, chipped stone tools become larger and not as carefully fashioned, ground slate points and knives become common and then diminish in popularity (McGhee

1980). In spite of the conservatism of Middle Palaeo-Eskimo technology there appears to have been occasional lapses into faddism whereby certain styles were adopted and then abandoned in a manner that has nothing to do with their technological function or efficiency. Clearly there were changes in stylistic concepts and cultural values.

A distinctive characteristic of Middle Palaeo-Eskimo culture in the Central Arctic was the use of atypically large chipped quartzite implements. Microblades were also generally scarce or absent (Arnold 1983). In the east, evidence of Independence I and II complex technological traits possibly reflect a common land-sea scape of open water coasts with deep fiords that extended from Labrador to Ellesmere Island and Greenland and contributed to cultural exchanges. Despite regional variability, however, the basic nature of the tool kit changed relatively little through time (Maxwell 1985).

Most Middle Palaeo-Eskimo sites consist of mixed multiple occupations and chronology has largely been established on the basis of toggling harpoon attributes rather than demonstrable isolated components. Dating sites located on different elevated marine beaches must also be used with caution as there is not a one-to-one correlation between site age and beach elevation (see Collins 1962: 127-129). Allowing for some probable component mixture, the eight most common stone tools from the early Dorset complex Tanfield site on southern Baffin Island were as follows: microblades making up nearly half of the collection; ground slate knives; chipped triangular points; soapstone vessel fragments; end scrapers; and side-notched knives, ground burins, and biface knives (Maxwell 1985: Table 7.2). At the same site there were noticeable increases in the use of quartz crystal for microblades and nephrite for burins and adzes and, in particular, an increase in the use of ground slate knives. For a detailed consideration of regional technological variability in the Dorset complex see Maxwell (1985: Chapter 7) and Collins (1957; 1975).

An early Dorset complex house at the Nunguvik site on northeastern Baffin Island had poor bone preservation but produced a large sample of stone tools. These items consisted mainly of broken microblades, flaked burins and burin spalls, ground burins, ground slate multiple side-notched points and similar chipped stone points, and side and end scrapers (Mary-Rousselière 1976:43). Single component collections with large artifact samples, like the foregoing, tend to be rare. The Groswater complex EiBg-43A site on the Strait of Belle Isle, Québec also appears to represent a short-lived, single occupation. The tool kit at the site, exclusive of utilized flakes and cores, consisted of the following: microblades (22); bifacially flaked knives (15); end scrapers (10); biface fragments (10); polished tool fragments (5); ground burins (5); abraders (3); burin spalls (2); side-notched points (2); triangular point (1); side blades (2); stone awl (1); spoke shave (1); axe (1); and wedge (1) (Pintal 1994: Table 8).

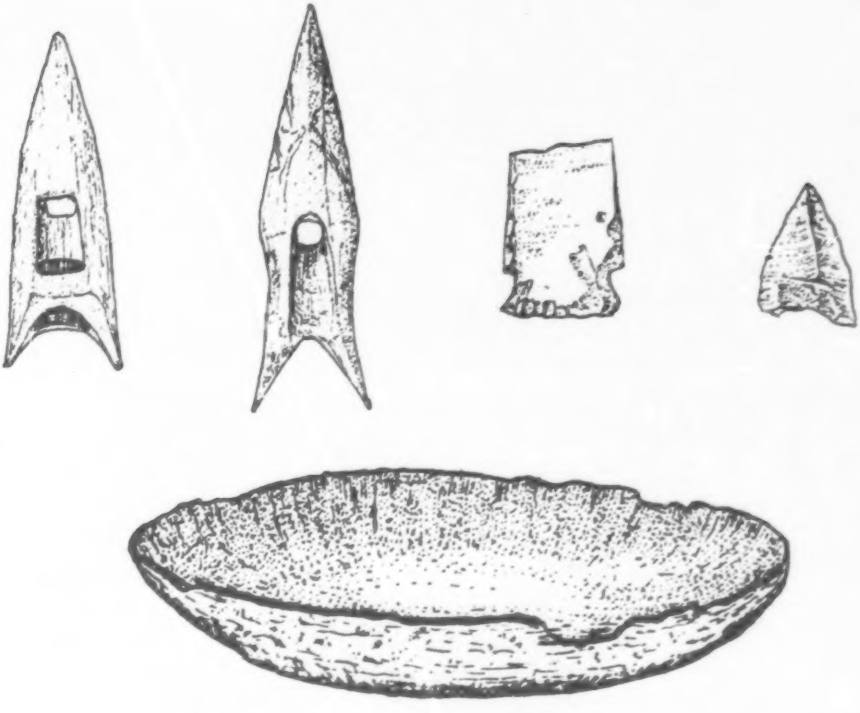


FIGURE 105: MIDDLE PALAEO-ESKIMO IMPLEMENTS To the upper left are two toggling harpoon dating to 900 BC and AD 500, respectively. To their right are a ground chert burin and a tip fluted triangular point. Below is a soapstone lamp although Period IV lamps are usually rectanguloid in form. (Drawings by Mr. David W. Laverie. Scale: variable)

Two areas of technology, all too often ignored by archaeologists, have been addressed to some extent by Arctic archaeologists. First, with reference to the Lagoon complex Crane site in the Central Arctic, there is an exemplary examination of archaeological waste products such as fire fractured rock, stone chipping debris, and broken bone fragments with detailed qualitative and quantitative information relating to cultural activities (LeBlanc 1994). Second, at the Tuvaaluk site on the northwestern corner of Ungava Bay in northern Québec, the opportunistic use of local stone materials as expedient tools is given detailed consideration (Lebel et Plumet 1991). The point is clearly demonstrated that archaeologists need to carry out total analyses, including the so-called stone detritus, in order to reconstruct stone tool reduction sequences and how these sequences were applied to different materials. In another study, dealing with Early Palaeo-Eskimo but pertinent to Middle Palaeo-Eskimo, detailed consideration was given to use-wear on tools and flakes (Plumet 1980). Burination, for example, was not restricted to formal burins but was also applied to simple expedient flakes. Use-wear studies are fundamental to any accurate consideration of tool function.

Although space and focus regrettably does not permit a detailed consideration of the obviously pertinent Palaeo-Eskimo evidence from Greenland, some brief comments are in order. Even though the Qeqertasussuk site in western Greenland dates to the end of Period III the findings are pertinent to Middle Palaeo-Eskimo culture. The exceptional organic preservation at this frozen site provides insights into technology denied most archaeologists. Recovery of wooden handles for tools (Grønnow 1994: Figure 15) and evidence of a much more elaborate weapon system than is usually envisioned, are particularly noteworthy. The late Saqqaq complex arsenal included the following: light and heavy lances; toggling harpoon systems including the light throwing harpoon; spearthrower; bird spear; bow and arrow; and light throwing spear (Ibid: Figure 27). There is evidence that the bow was of composite construction and reinforced by sinew. Evidence of kayaks and oars was also recovered. What is further noteworthy is that during the more than 1,000 years of occupation at this site there was very little evidence of technological change (Ibid: 232).

As a final thought on Palaeo-Eskimo technology, including Middle Palaeo-Eskimo culture, Inuit oral tradition attribute the stone caribou drive lanes and stone fish traps that dot the Arctic to their Tunit predecessors (Dorset). Early in the 20th century a Netsilik Inuit noted that "Our country Tunrit made into country, giving it crossing places and, for the caribou made paths and the rivers furnished with saputit" (Rasmussen 1931: 113).

Subsistence:

As could be judged from the coastal distribution of Middle Palaeo-Eskimo settlement sea mammals were the main source of sustenance. Although most sea mammals were exploited, seal were the most important and ranged from the large 350 kg bearded seal (*Erignathus barbatus*) to the smaller harbour (*Phoca vitulina*) and ringed seals (*Phoca hispida*). In the eastern Arctic, and in Newfoundland, in particular, the harp seal (*Phoca groenlandica*) was of great importance. Caribou would have been seasonally important, probably as much or more for their hides and antler as meat. Musk-ox and bird rookeries were seasonally exploited. It is suspected that the polar bear (*Ursus maritimus*) was not hunted per se but was killed either opportunistically or in self defence. It may have also been advisable to reduce their numbers in areas where both bears and people congregated. Of course, a hibernating bear, particularly females with their cubs, would have been vulnerable to hunters as their dens could be tracked down by dogs and the bear would be in a state to stupor. Walrus (*Odobenus rosmarus*), beluga or white whale (*Delphinapterus leucas*), and narwhal (*Monodon monoceros*) were also important. Baleen, the bony plates of certain large species of whales that strain plankton, has been recovered from sites in the Pond Inlet area of northern Baffin Island. This raises the possibility of the hunting of large whales like bowheads (*Balaena mysticetus*) (Mary-Rousselière 1976: 54). Large whale bones are not common on Middle Palaeo-Eskimo sites and their presence has generally been attributed to scavenging. Evidence from the late Period III Quqertasussuk site in western Greenland, however, (Grønnow 1994) raises the likelihood that at least some Palaeo-Eskimos had the technology and skill to kill these large mammals. With reference to the archaeological presence of whale remains on sites, it is likely that the animals were butchered at the kill location with particular emphasis upon the thick layer of fat and that the bones were left behind. Another line of evidence suggesting the possibility of the foregoing are the large harpoon heads from the Baculum site on Ellesmere Island which were believed to be used for hunting beluga and narwhal even though seal and walrus remains dominated the faunal assemblage (Schledermann 1990: 182). In contrast to the foregoing, other animal parts are frequently over-represented on archaeological sites such as caribou mandibles, which would have contained the highly valued tongue, and the forequarters and legs of seals (Maxwell 1985: 144). For a discussion of the factors, both natural and due to human selection, that can effect what portions of animals are likely to survive on an Arctic site see LeBlanc (1994: 100-108). In terms of bone recovery there is also the problem of the larger bones being used for fuel and thus leaving an undeserved impression of the importance of smaller animals (Schledermann 1978: 48-49).

At the 800 BC T-1 site on Southampton Island, in the north end of Hudson Bay, the faunal remains were predominantly seal followed by walrus, bird, and fox with smaller amounts of other animals (Collins 1975: Table 1). In contrast, the approximately contemporaneous Nunguvik house in northern Baffin Island produced mainly caribou with decreasing numbers of seal, walrus, and narwhal (Mary-Rousselière 1976: 44). Nearly 98% of all of the bone refuse from House 4 at the Port aux Choix site in western Newfoundland was seal, mainly harp seal, with only traces of caribou, fox, beaver, fish, and migratory birds (Harp 1976: 128). In the latter instance, the faunal materials suggest spring seal hunting when ice flows with their whelping seal pups were concentrated in the area by prevailing westerlies. At the two family house at the Koliktalik site on the

Labrador coast small seal dominated the faunal assemblage followed by walrus and bearded seal and with only traces of other species (Spiess 1978). Regarding seasonality, it has been estimated that the house was occupied from mid-October through to April on at least twelve different occasions. In the High Arctic a large sample of bone from an Independence II complex dwelling was dominated by seal with a relatively small amount of Arctic Fox (*Alopex lagopus*) (McGhee 1981a: Table 2).

Most faunal assemblages from Middle Palaeo-Eskimo sites in the Central Arctic tend to be dominated by caribou and musk-ox (Maxwell 1985: 197; but see LeBlanc 1994). There is a possibility, however, that people were spending the winter in igloos on the sea ice and that, for all intents and purposes, the winter portion of the subsistence round is missing from the archaeological record (Maxwell 1976: 78).

Some site areas were occupied in a relatively continuous fashion during Palaeo-Eskimo times suggesting a degree of continuity in food availability, such as in Labrador (Cox 1978; Maxwell 1985; Tuck 1976: 97). The disappearance of the Newfoundland Island Dorset was likely due to the lack of fall-back resources on the Island. When, for example, the harp seal that people depended upon for survival were not available people would starve or be forced to leave (Pastore 1986; Tuck and Pastore 1985). This was particularly true on the northern and western coasts of the Island and it has been suggested that a combination of periodic failure of harp seal to appear and encroaching Indian bands around the beginning of Period V forced the Dorset people into less favourable locales like Plancentia Bay (Pastore 1986).

Middle Palaeo-Eskimo caribou entrapment sites have been recorded. In northern Labrador a V-shaped funnel trap constructed of converging lines of boulders associated with posts, blinds, and inuksuks, was discovered (Fitzhugh 1981). This Dorset complex pound was built in conjunction with the local topography, including the incorporation of a large boulder at the apex of the converging drive lanes to form a kind of pound enclosure. It is speculated that snares attached to posts would have been interspersed in the lines of boulders. At the Ekalluk River caribou trap in the Central Arctic a series of inukshuks parallelled the coast for nearly 1.6 km leading to a crescent-shaped main inukshuk system. This system was 550 m inland from the sea coast and extended 275 m along the bank of a river (Taylor 1972: Figure 22). The trap was likely intended to intercept caribou crossing from the mainland at the Desease Strait via the Finlayson islands and then moving north along the east side of Wellington Bay. Shooting pits were placed in gaps in the inukshuk systems. It was speculated that 25 to 35 families would have been required to operate a trap of this size.

It has been surmised that the importance of plant foods has been under emphasized in the Arctic (Maxwell 1985: 129). Vitamin C, minerals, and carbohydrates in plants would have represented valuable nutritional additions to the diet. Berries, willow leaves (*Salix* sp.), the flowers and leaves of fireweed (*Epilobium* sp.), and sorrel leaves (*Oxyria* sp.), as well as edible seaweeds with their iron and other minerals, would not have been overlooked. The probable importance of plants in the diet has been borne out by the recovery of human faeces from the late Period III Qeqertasussuk site in western Greenland which contained seeds of crowberries (*Empetrum nigrum*) and mountain sorrel (*Oxyria digyna*) (Grønnow 1994: 217).

Settlement patterns:

As archaeological research progresses so does an appreciation of the complexity of the Palaeo-Eskimo occupation of the Arctic. Even in Period III there appears to have been a number of discrete populations or, more accurately, band groupings that shifted eastward occupying different territories. There is also evidence that regional diversification took place very early, including within the so-called discrete complexes, such as Independence I (e.g. Sutherland 1996). The small, mobile bands that occupied the lands appear to have been capable of moving considerable distances in a very short period of time. Undoubtedly the possession of efficient watercraft and hunting methods adapted to the capture of sea mammals heightened the degree of mobility across the vastness of theArctic. Duration of occupation in any area could be variable. For example, while cultural continuity between the Independence I and II complexes is apparent on Ellesmere Island (Schledermann 1990), in other regions there are time breaks between these two complexes reflecting different short-term occupations (McGhee 1996: 67). Some breaks in human occupation could relate to the necessity to leave certain regions fallow for a period of time in order to allow animal populations to increase and their caution of humans to wane. Different Palaeo-Eskimo complexes, such as Independence I and II, Pre-Dorset, Dorset, Saqqaq, Lagoon, and Groswater, not only occupied different regions at different times but colonized different territories. Their technologies also merged with one another along their respective boundaries in a highly complex manner. The Labrador coast, most of the southern shore of Hudson Strait in northern Québec, the northshore of the Gulf of St.Lawrence, and the Island of Newfoundland during the early portion of Period IV, for example, was occupied by the Groswater complex that descended throughout most of this region from an Early Palaeo-Eskimo occupation during Period III. The Independence I complex roots of the Groswater complex are apparent in both dwelling forms and technology. Most Arctic archaeologists believe that the Groswater complex was absorbed by a later Dorset complex migration originating from the Core area. Few, if any, would disagree that the interrelationships of regional groupings of people, differentiated mainly on the grounds of technology, is one of the most difficult problems facing Arctic archaeologists today. Matters have been further complicated by regional environmental differences and the necessity for people to adapt to said differences. On the southern coast of Baffin Island, for example, the abundant sea mammal life bordered an area characterized by very rough topography, extremely high tides and strong currents where human land settlement was restricted to the few flat areas tucked between bedrock outcrops. As a result, large multi-component sites, with considerable cultural mixture, are the norm (Maxwell 1985). This contrasts with the Central and High Arctic where sparser game concentrations, less favourable sea ice conditions, and the presence of long gravel beaches for camping, have resulted in smaller and more dispersed human settlement and a higher level of component isolation than generally encountered in the Core area.

Settlements within any single region can be quite variable. Early in Period IV in the Dorset complex, for example, there are permanent winter villages strategically located near the land fast ice and water interface. Dwellings were rectanguloid structures with walls of refuse, boulders, and turf, measuring 4 by 5 m and excavated as much as 0.5 m into the soil. A central stone pavement corridor divided the house in two sleeping areas. Evidence of central hearths are lacking but soapstone oil lamps are present (Maxwell 1973). In contrast, a relatively short distance to the west, at the early 8 hectare Dorset T-1 site on the south coast of Southampton Island, there were no features in the shallow middens except for a few hearths and an occasional irregular arrangement of flat stones suggestive of flooring (Collins 1975: 68). The lack of features and particularly dwellings suggests occupation during the warmer months when flimsy portable tents were used that left little or no archaeological trace. An abundance of migratory bird bones also suggested a summer occupation. Situated on a high promontory overlooking the sea, the prevalence of seal remains at T-1 likely relates to open water hunting rather than ice-edge hunting. Later Palaeo-Eskimo occupations on lower beaches of this major area also lacked significant evidence of features. Off the southern coast of Southampton Island on tiny Walrus Island dwellings attributed to Dorset, but subsequently reoccupied by the local Sadlermuit Inuit population of Period V, have been recorded (Collins 1975: 76). Walrus Island is a major walrus haul-out locale and it is obvious that Dorset people had no difficulty navigating the 40 km of open sea from Southampton Island (Collins 1957). The six houses involved were constructed of massive blocks of granite and sometimes incorporated natural bedrock ledges as parts of the flooring, walls, and sleeping platforms. Dwellings were oval to rectangular in outline with entrance passage ways, except for a three room, clover-leaf shaped dwelling that resembled later Sadlermuit houses. It could be argued that such structures actually pertain to the Inuit of Period V and have nothing to do with Dorset people. Despite the non-typical Dorset dwelling forms, the archaeological recoveries from the dwellings suggest otherwise. It may be speculated that with the frequency of polar bears on this Island, given its proximity to the pack ice, humans would be advised to construct more substantial dwellings than usual. One of the houses even had massive stone uprights to support a roof of rock slabs. If the assumption that these dwellings relate to Palaeo-Eskimos is valid, it is apparent that even in the same general region there can be considerable variability in the nature of settlement characteristics as determined by season of occupation and local situations.

Given the area involved and for the sake of descriptive convenience settlement pattern characteristics will be described under four regional categories. These consist of (I) the Central Arctic, incorporating land adjacent to the Queen Maud, Coronation and Amundsen gulfs, and Victoria, Banks and Melville islands, (II) a Core area in the Eastern Arctic centred on the Foxe Basin including Hudson Bay, portions of Hudson Strait, Baffin Island and west to Prince of Whales and King William islands, (III) the High Arctic Islands extending north of Lancaster Sound and including Devon, Cornwallis, and Bathurst islands and north to Ellesmere Island and northern Greenland, and (IV) Québec, Labrador and Newfoundland with the Québec occupations involving most of the northern coast and a portion of the northshore of the Gulf of St.Lawrence. All of these regions have overlapping zones of influence as represented by the various complexes of Middle Palaeo-Eskimo culture. Much of what follows is somewhat repetitive and admittedly disjointed and is intend to convey a sense of the variability that exists in Middle Palaeo-Eskimo settlement characteristics.

At this point it may be noted that the reasons for Palaeo-Eskimo population and/or family migrations were likely similar to those historically documented for the Inuit. These were as follows: the need to seek out game; availability of suitable mates; feuds; population pressure; wander lust; and the desire to return to die at place of birth (Mary-Rousselière 1976: 55).

I. CENTRAL ARCTIC:

In the area from Coronation Gulf west to the Yukon coast, north to the archipelago of which Victoria, Banks, and Melville islands are the largest islands, Palaeo-Eskimo culture appears to have "...underwent divergent development over a long period of time, with weak penetration by groups originating in what were apparently more densely occupied areas to the east" (Arnold 1983: 15). The best described Middle Palaeo-Eskimo site in the Central Arctic is the Lagoon complex Crane site to the east of the Mackenzie River Delta on the Cape Bathurst Peninsula (LeBlanc 1994). Site location was based upon proximity to both caribou and seal, with the former being most important. Both the deep ravines adjacent to the site, that would have acted as natural caribou entrapment areas, and a broad vista overlooking the Horton River, would have favoured the hunting of caribou. Seal, mainly ringed seal (*Phoca hispida*) were available on the sea ice of Harrowby Bay about 10 km to the west. Another local resource of importance were snow geese (*Chen caerulescens*) who moult in the region. Evidence of dwellings was lacking although shallow basin-shaped hearths with fire-reddened floors filled with fire cracked rock, bone fragments, wood shavings, and charcoal were recorded as were other hearths composed mainly of ash with adjacent concentrations of refuse. Two middens were identified. Chipped stone consisted of local Cape Bathurst varieties (Ibid: 52). In terms of Central Arctic Lagoon complex relationships, in addition to western contacts, it is also observed that “The relationship with Dorset and Pre-Dorset is clearly strong, and I think it reflects sustained inter-group contact in one way or another with Palaeoeskimo bands further to the east” (LeBlanc 1994: 98). At the Bernard Harbour I site, situated on the mainland opposite the southwestern corner of Victoria Island, seven tent rings were strung out along a beach in proximity to the mouth of good char (*Salvelinus alpinus*) fishing locale (Taylor 1972). The dwellings were oval to subrectangular in outline and ranged from 2.4 by 3.0 m to 6.4 by 7.0 m in size with the latter structures obviously housing a number of families. Emptied stone food caches also were present. Some tent rings, such as at the Newnham site, employed very large rocks as weights around the periphery of the dwellings (Ibid: Figure 15). In contrast, at the early Dorset Joss site, adjacent to the Kuuk River on western Victoria Island, there was no evidence of dwellings although a hearth was recorded (McGhee 1971: 162). Caribou were most important at this site followed by birds, seal, musk-ox, and fish. Along the 1.6 km of the Ekalluk River that drains Ferguson Lake to the southern coast of Victoria Island, a major concentration of Early and Middle Palaeo-Eskimo sites as well as Inuit (Thule) sites has been recorded (Taylor 1967). The early Dorset Ballantine site in this locale had a curious association of abundant caribou remains and toggling harpoons suggesting that the latter weapons were used in capturing caribou. Spawning char during the fall were likely an additional attraction to the area. Continuity of human occupation over a long period of time suggests relatively stable and, thus, predictable seasonal resources (Ibid: 223).

II. CORE AREA:

Dorset sites in the Core area are larger and more abundant than their Pre-Dorset predecessors. This has been attributed to a more successful local adaptation (McGhee 1978: 63) with the settlement pattern reflecting a focus on sea mammal hunting and a concomitant coalescence of people into a more limited range of site options. It has been further speculated that “. . . most Dorset people probably passed the winter in snowhouse communities hunting seals at their breathing holes” (McGhee 1978: 64). The oval house with central hearth area or axial structure typical of Early Palaeo-Eskimos is, in part, replaced with rectanguloid, semi-subterranean 5 by 4 m house floors with side benches at places like Igloolik (Meldgaard 1962: 93) although large 14 by 7 m communal dwellings are also recorded. Such dwellings resemble those of the Nunguvik site in northeastern Baffin Island. Among the early Dorset houses at the latter site was a rectanguloid dwelling, measuring 5 by 4.5 m, associated with a midden and evidence of hearths at a number of places close to the interior walls (Mary-Rousselière 1976). A number of the sites along the coast of southern Baffin Island occur on turf-covered permafrost in narrow pockets between the bedrock outcrops. Such locales would have been wet and uncomfortable during the summer (Maxwell 1973) even though the scarcity of stone lamps at a site like Nanook suggests a warm weather occupation (Ibid: 181). Dwellings are inferred to have consisted of igloos, sod structures, and from direct archaeological evidence, oval to rectanguloid houses demarcated by stone walls. Some sites were occupied intensively, such as the Tanfield site. Here, as at the T-1 and T-3 sites on Southampton Island in the north end of Hudson Bay and the Tyara site off the northwestern coast of Québec, there was no archaeological evidence of dwellings suggesting that they consisted of snow-block and/or flimsy skin tent structures (Maxwell 1985: 169-170). When dwellings are recognizable they are often characterized by a 0.9 m wide central passage of stone with vertical slab margins that divide the living floor into two sleeping units. Similar structures have been reported from the Seahorse Gully site on the west side of Hudson Bay (Nash 1969: 154). Situated at the mouth of the Churchill River, the five Dorset houses at this site ranged from 4.3 to 7.3 m in length and 2.4 to 6.7 m in width. On the coast of Québec, east of the Belcher Islands and in Ungava Bay, there are a number of dwellings estimated to date late in Period IV which possess central passage flagstone central corridors flanked by presumed sleeping areas (Plumet 1976: 194-195, Figure 25). Such dwelling forms resemble the Early Palaeo-Eskimo houses of Period III and are indicative of some degree of continuity. Amorphous dwellings, suggestive of sod-walled and skin-roofed structures lacking stone axial corridors, are found in the High Arctic, Labrador, northern Québec, and along both sides of Hudson Bay (Maxwell 1985: 153-155). Probably such sites were occupied in the fall. An interesting settlement feature at the Nanook site was a 1 m wide wall of rock and sod that parallelled the edge of a bedrock outcrop for the length of the site and along which occurred four hearth areas as well as extended sleeping benches for separate tents (Maxwell 1985: 201). In the same region of southern Baffin Island the Morrison site early Dorset dwelling, measuring 5 by 9.4 m, had been dug 46 cm into the ground. A stone sleeping bench ran the length of the house with a number of scattered cooking areas around the perimeter. There was also some evidence that a skin roof, probably covered with snow, had been supported by driftwood uprights (Maxwell 1985: 155-157). During a period of unstable cold climate that reached a peak around 150 BC (Maxwell 1985: 198) there appears to have been a population decline on Baffin Island

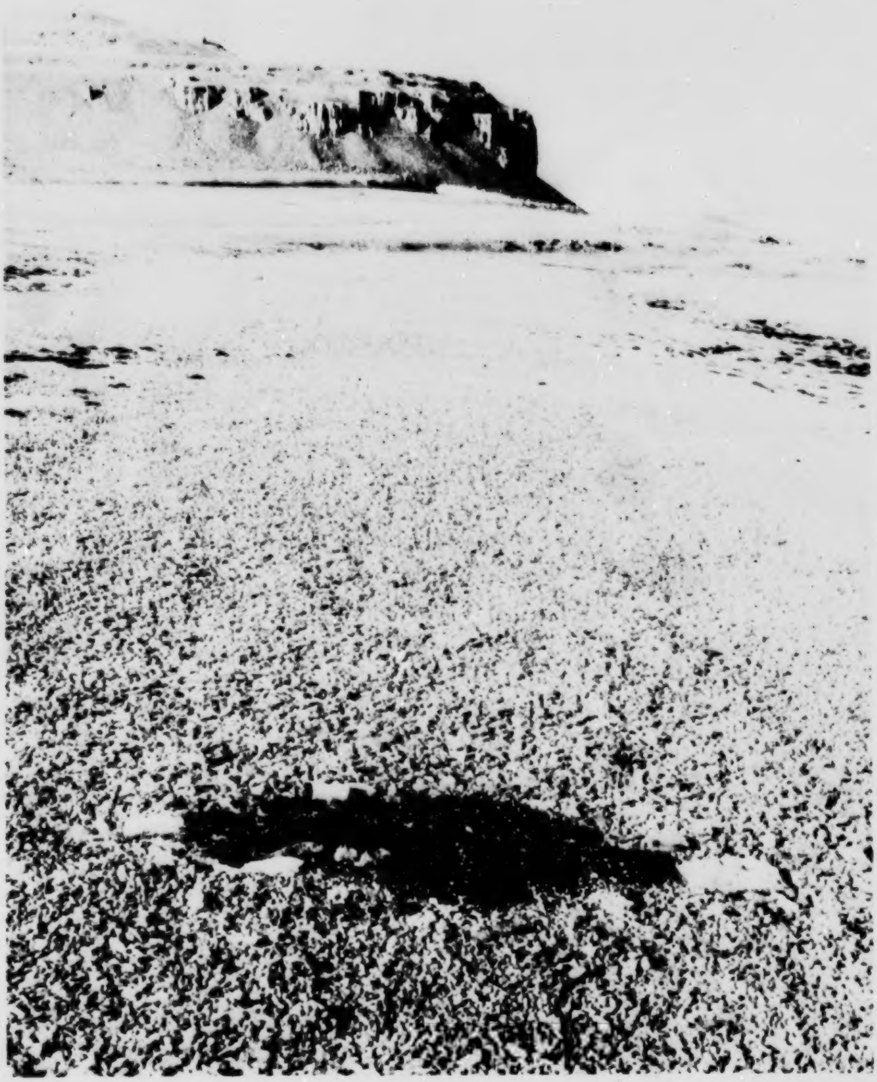
and elsewhere which may have been a product of people moving out onto the sea ice into igloos (Ibid: 211).

Exotic materials from sites represent one of the most convincing bodies of archaeological evidence relevant to interrelationships between distant groups of people. Musk-ox wool was recovered from the Nanook site on southern Baffin Island (Maxwell: 1985: 131). As musk-ox do not occur on Baffin Island (Freeman: 1984) the wool was likely imported from either the north or the west. A distinctive banded chert from a geological deposit on the southern coast of Southampton Island and the major chert variety found at the T-1 site, has also been reported from a Lake Harbour site on the southern end of Baffin Island more than 600 km to the east (Maxwell 1985: 181). Ramah quartzite from the northern Labrador coast has also been identified at the T-1 site (Cox 1978: 118) and indicates contacts between early Dorset and Groswater complex sites.

On Somerset Island, to the west of northern Baffin Island, an archaeological survey involving a 33.5 km transect along the southwest coast of Ashton Bay incorporated a wide range of settlement variables and disclosed, in addition to earlier and later occupations, 13 small Dorset sites that would pertain to Period IV and V. The sites appear to represent briefly occupied camps established while travelling between the sea ice and inland hunting territory (Bielawski 1982). Sites were more likely to occur at the mouths of bays rather than on the inner bay and a lack of concern for fresh water suggests that they were cold weather occupations. In contrast to the findings from Ashton Bay is the evidence from the southern coast of Devon Island, immediately north of Somerset Island, where Dorset sites tended to be located on the inner bays back 5 km from Lancaster Sound and, to a lesser extent, at bay mouths and on the open coast (Sutherland 1991: Table 1). There was little evidence in this region of human occupation on coasts lacking bays and fiords. Settlement distributions further suggested the exploitation of stable ice rather than open water hunting. The foregoing emphasizes the important point that local conditions could significantly alter how people distributed themselves across the landscape and that areas even in close proximity to one another could have quite different settlement distribution patterns and characteristics. As most archaeologically recognized Dorset sites are situated in exposed locations, suggesting warm weather occupations, it is probable that winter occupation was on the sea ice and, therefore, archaeologically invisible.

III. HIGH ARCTIC ISLANDS:

A common characteristic of the small, dispersed dwellings of the High Arctic is that house floors are often demarcated by concentrated growths of purple saxifrage



BLACK AND WHITE PLATE XXXXII: AN INDEPENDENCE II COMPLEX DWELLING IN THE HIGH ARCTIC The small tent structure in the foreground is demarcated by Arctic plants exploiting the limited nutrition left by the human occupants some 2,500 years ago. In the background is a bird rookery where eggs, birds, and their young could be obtained and probably represents an important factor in the location of the dwelling. (Photograph courtesy of Dr. Robert McGhee. The same photograph was published as Plate 4 in Ancient People of the Arctic (McGhee 1996)).

(*Saxifraga oppositifolia*) and mountain aven (*Dryas integrifolia*) as well as some other plant species that exploit the sparse nutrition left by human refuse (McGhee 1981a: 5). Black and White Plate XXXXII illustrates the phenomena particularly well. All that remains of such dwellings are the remnants of the central passage with slab stone box hearths and two sleeping areas to either side (Ibid: Figure 10). Artifacts tend to be concentrated around the hearth. Dwellings are often associated with a downslope midden. During the 1,000 to 500 BC occupation of Dundas Island by Independence II complex people, dwellings were arranged lineally along beaches and were separated from one another by 20 m or more (McGhee 1976: 20). These mid-passage dwellings, with their rectangular vertical stone slab demarcated hearth boxes running along the axis of the central passage, were oriented perpendicular to the shore. Occasionally structures lack peripheral stone or gravel walls.

Human occupation of the High Arctic has been regarded as peripheral to the Core area and periodic, a place from which people could retreat to the Core area as circumstances dictated or even where periodic extinctions took place (McGhee 1976). It has been further suggested that "...none of the fringe area occupations, including the High Arctic, exhibit significant continuity or relationships to one another" (Ibid: 38). More recent research questions such an interpretation (e.g. Schledermann 1990) and while there were low points of occupation, and even some abandonment during cool climate, it is probably more accurate to think of the occupation of the High Arctic in terms of intensity rather than presence or absence (Schledermann 1978a). During the earlier portion of Period IV, Independence II sites in northern Greenland exhibit a relationship with the sites of people who occupied much of the Canadian High Arctic (Fitzhugh 1984) as well as Igloolik and the northern Québec and Labrador coasts. For example, modified forms of the earlier axial house structures are present. While northern Greenland appears to have been abandoned, due to climate change after 400 BC, the Dorset complex occupied both the west and east coasts of Greenland (Fitzhugh 1984: Figure 13) and appears to be distinct from the preceding Sarqaq complex. On the other hand, key transitional sites may simply not have been discovered. Despite apparent fluctuations in occupation or intensity of occupation, people in western Greenland and adjacent Canada were able to maintain contacts.

At the early Dorset Baculum site on the east coast of Ellesmere Island small rectangular caches, lined with flagstones, were associated with two tent rings and outdoor work areas around boulder seats and hearths (Schledermann 1990: 177). In the same area at the Tusk site, a 4.2 by 2.9 m dwelling contained a 0.5 m wide axial structure consisting of a flagstone platform to the rear, a central hearth area, and another platform. Such structures generally have two sleeping areas on either side of the central corridor feature. Immediately adjacent to the dwelling was a flagstone demarcated hearth or cache (Ibid: 184-185). As elsewhere in the High Arctic, a primary settlement criteria in the Bache Peninsula area of east-central Ellesmere Island was proximity to polynyas (Ibid: 119). Polynyas are continually open-water areas in the High Arctic that are bordered by ice and land and are generally rich in marine mammals and thus in archaeological remains (Schledermann 1980). For obvious reasons, sites with a good view overlooking the open water were favoured. Twelve major polynyas occur in the High Arctic (Ibid: Figure 1) although not all are rich in sea mammals or provide evidence of continuous human occupation. Periodic human occupations, however, can span 4,000 years. Seal and, in particular, walrus were important in such locales during the spring and summer and caribou and musk-ox would also have been available in the general area. The scarcity of stone food caches at the land based camps has led to the suggestion that they represent fall camps and that winter settlement had shifted to snow houses on the sea ice nearer to the edge of the open water (Schledermann 1996: 68).

In western Greenland, at the Quqertasussuk site in Disko Bugt, the issue of discontinuity or continuity between the Saqqaq and Dorset complexes has still not been resolved (Grønnow 1994: 233). Settlement distributions suggest the existence of a few populated areas separated from each other by great distances of intervening coastline lacking permanent populations. Despite the isolation of communities along the western coast of Greenland contacts clearly were maintained as witnessed by the coast-wide distribution of killiaq, a silicified slate from a geological source in Disko Bugt.

IV. QUÉBEC, LABRADOR AND NEWFOUNDLAND:

The Groswater complex, originally designated as Groswater Dorset, was first defined on the basis of sites near the entrance to Hamilton Inlet on the central Labrador coast (Fitzhugh 1972: 148-151). It has now been identified as being present in northern Québec from just west of Ungava Bay to Labrador, down the Labrador coast, onto the Island of Newfoundland, and the northshore of the Gulf of St.Lawrence. It was a descendant of an earlier Period III colonization originating from northern Greenland, Ellesmere Island, and eastern Baffin Island. Another colonization movement out of the Foxe Basin occupied the western Ungava Peninsula of Québec and the coast of Hudson Bay (Plumet 1994). An eastern association of most of the early Middle Palaeo-Eskimo peoples of northern Québec is supported by the presence of exotic stone from Labrador, such as Ramah quartzite and Mugford chert (Ibid: 110). A majority of the reported sites in northern Québec, however, date to Period V (Ibid: Tableau 2) and will be considered in Volume III.

In Labrador, in addition to using the outer islands, people settled on the inner bays and islands like their predecessors. Settlement in the ends of deep bays would pertain to the winter occupation while camps on the inner islands were likely fall to spring camps (Cox 1978: 104). Dwellings are of the mid-passage form but generally contain little in the way of artifacts. At the late fall through early winter Postville Pentecostal site, situated in the end of a deep fiord on the central Labrador coast, dwellings were difficult to demarcate as stone construction material, obtained from the other side of the bay, was cannibalized by later people for their own use (Loring and Cox 1986). There is some evidence of 5 by 2 m mid-axial structures with stone slab box hearths. Dimensions of the dwellings repeat a Groswater complex pattern of "...two tightly allied family groups..." (Ibid: 77) who lived together for at least a part of the year. Discrete and isolated box hearths, containing charcoal and fire cracked rock, were also reported from this site. Cherts from western Newfoundland and Ramah quartzite from northern Labrador clearly indicate that the people maintained far flung contacts. An axial mid-passage structure at the Nukasusutok-12 site, near Nain on the Labrador coast, measured 5 m in length and the flagstone axial structure with a vessel support rock was between 75 and 100 cm in width (Hood 1986). Only two microblades were associated with this structure but another 4 m diameter dwelling, dated to 500 BC, with a similar axial structure, two or three hearths, and lacking peripheral weight stones, contained 70 artifacts. Such differences in debris concentrations must relate to duration of dwelling occupation or function. House forms at this site consisted of rectangular structures with central boulder alignments, semi-subterranean dwellings with central pavements and pits, and rectanguloid tent floors with axial pavements but lacking peripheral weight stones (Ibid: 53-54). The presence of double hearths at each end of a dwelling, an early Dorset trait, raises the possibility of continuity in dwelling characteristics between the Groswater and Dorset complexes.

The two major sources of high quality stone on the Labrador coast were Mugford chert and Ramah quartzite. While Dorset people from Nain north relied almost exclusively on Ramah quartzite (Nagle 1986: 96) there is some evidence of a 2,000 year old exchange system. On the basis of the occurrences of exotic stone there was a reciprocal relationship between northern and central Labrador and the Island of Newfoundland. Newfoundland cherts, however, appear to be absent from early Dorset sites in Labrador suggesting a break in communication although this would change dramatically through time (Ibid: 101). During the Dorset complex occupation of the Labrador coast a continuous use of Ramah quartzite is indicative of cultural continuity. There also appear to have been close contacts during early Dorset times with the Core area. Early Dorset dwellings in the area are subrectangular in outline, measuring 6 by 5 m with no apparent mid-passage or entrance way (Cox 1978: 107). Rectangular subterranean houses, measuring 5.5 by 3.5 m on the interior with entrance passage ways and paved mid-passages, a paved back portion of the dwelling, and some vertical slabs placed at the ends of a central hearth, were in use during the latter third of Period IV. Other rectanguloid dwellings had both axial features and entrance passage ways, as well as cleared sleeping areas on either side of the central corridor, suggesting, once again, some possible relationship with the earlier Groswater complex. Warm weather tent rings of rectanguloid form with central cobble or slab pavements are also recorded. Among the 15 Dorset sites recorded in Saglek Bay in northern Labrador (Tuck 1975) is a probable quarry site where the local Ramah quartzite was fashioned into microblades and blades. Ramah quartzite dominates at all sites in this locale and its use increases through time while use of chert decreases and quartz crystal use remains constant (Ibid: 182). The occupation appears to span a period from prior to 500 BC to the early centuries of the Christian era.

In the Strait of Belle Isle area, at the Wrinkle site, Ramah quartzite was recovered indicating contacts far to the north (McGhee and Tuck 1975: 73-75). Western Newfoundland cherts, such as Cow Head chert, is also common on sites along the northshore of the Gulf of St.Lawrence. Groswater complex sites in this area have been dated to around 600 BC (Pintal 1994: Table 1). The EiBg-43A site, at the mouth of the Blanc-Sablon River in Québec adjacent to the southern Labrador border at the Strait of Belle Isle, represented a single component spring occupation by Groswater people (Pintal 1994). Six hearth areas were demarcated, some associated with concentrations of charcoal and fire cracked rock, and may represent the remnants of flimsy structures that have left little in the way of an archaeological record. One feature, however, did tentatively suggest the existence of an axial structure. Some hearth areas produced evidence of domestic activities in the form of knives, microblades, and side blades while others were associated with tool production in the form of end scrapers, burins, and abraders.

There is considerable confusion regarding the relationship between the Groswater complex and the subsequent Dorset complex. Most have argued that Groswater is unrelated to the Dorset occupation of Labrador and Newfoundland (e.g Jordan 1986; Tuck and Fitzhugh 1986). The appearance of Dorset has been treated as a separate migration (Tuck 1976: 99-100) that simply bypassed the earlier Groswater settlements. Curiously, excluding Groswater, there is no evidence of very early Dorset on the central and southern Labrador coast and, yet, it appears suddenly along the entire Labrador coast and onto the Island of Newfoundland about 2,000 years ago. The Groswater complex had already occupied the Island but it is still uncertain whether it was replaced by Dorset or was culturally absorbed. There are technological and dwelling style continuities between the Groswater and the Dorset complexes. For example, in the Nain area of the Labrador coast at the Koliktalik site, the semi-subterranean houses retain the mid-passage structures and central pavements separating sleeping areas on either side (Fitzhugh 1976b). Regardless of the eventually determined relationship between the Groswater and Dorset complexes the site distributions and the large size of the west coast sites of Newfoundland suggest a very successful colonization out of Labrador (Renouf 1994: 190). During the last 500 years of Period IV (AD 1 to 500), when much of the High Arctic, northern Greenland, Hudson Bay, and the Central Arctic were either unoccupied or only sporadically settled, the occupation of Newfoundland achieved its greatest population density (Jordan 1986). Contrary to earlier opinion, the Newfoundland Dorset do not appear to have existed in isolation from Labrador and the Gulf of St.Lawrence. This is indicated by the presence on Newfoundland sites of nephrite, likely originating from the Nain-Okak region, Ramah quartzite from 1,230 km north of Port au Choix, as well as Newfoundland Cow Head chert on the Koliktalik site on the Labrador coast some 980 km to the north (Ibid: 142-143).

Unlike other areas of the Arctic, during the last 500 years of Period IV along the Labrador and Newfoundland coasts Dorset occupations intensify, either as an in situ development with northern influences or the addition of a population influx from the north. A combination of the two processes is also a possibility. It is significant that an apparent population decrease in the north correlates with a population increase in the south (Maxwell 1985: 216).

At the Groswater Phillip's Garden East site near Port au Choix on the west coast of Newfoundland, that was occupied from 1,000 BC to AD 1, a 5 m diameter surface structure contained concentrated debris except on a probable rock sleeping platform to one side. A rock-capped storage pit occurred inside the dwelling and three other pits outside. A 3.5 by 3 m tent floor, demarcated by post moulds and containing a central hearth of fire cracked rock, was recorded at the nearby Philip's Garden West site. Cow Head chert from 115 km to the south and some Ramah quartzite from the north indicate wide ranging contacts. There was a major difference between the settlement patterns of Groswater and Dorset for "Whereas both the Groswater and Dorset groups moved from site to site, only the Dorset had the addition of a large permanent central site, which in a sense acted as a pivot to the otherwise mobile annual round" (Renouf 1994: 191). At the Beaches site on the Island of Newfoundland (Carignan 1975) the Groswater occupation was preceded by that of Maritime culture and followed by Dorset and Beothuk occupations. Such a stratified sequence clearly indicates a continuity of resource exploitation regardless of the cultures involved. The Groswater complex Factory Cove site on the Cow Head Peninsula of western Newfoundland, occupied for 600 years, contained structures that included lean-to's, shallow 2.5 by 4 m structures, circular tent rings with central hearths, and a bilobate dwelling with a mid-passage feature including a hearth (Auger: 1986). Evidence from the Cape Ray Light and Pittman sites in southeastern and northeastern Newfoundland, respectively, dating between 400 BC and

AD 700, suggest that settlement strategies, subsistence, and the basic tool kit were all essentially the same in Newfoundland as in the Arctic (Linnamae 1975: 88). The Pittman site was situated on a small island with good drainage, shelter, and trees for fuel and was within range of seal, caribou, and fish, particularly the salmon in the Main River. Unlike the situation further north, there is a single record of an interior Newfoundland Dorset caribou hunting site on the Exploits River (Carignan 1975: 136). At the Cape Ray Light site living areas, marked by concentration of cultural debris around hearths, were identified but definite dwellings were not located (Ibid: 36-37). This situation stands in contrast to that at Port au Choix on the west coast of Newfoundland where a Dorset occupation, spanning approximately AD 1 to shortly after AD 500, involved 36 house pits, 20 of which were completely or partially excavated by Elmer Harp (1976: Figure 3). Houses were arranged along two raised beaches in a parallel fashion and faced northwest over the sea. Early and late dwellings occurred on both beaches so beach elevation dating could not be applied. The settlement appears to have started with a pioneer house around 2,000 years ago and reached a maximum size of between 9 and 12 contemporary dwellings between AD 350 to AD 500 (Ibid: Table 1). Two types of dwellings were involved. A representative winter dwelling consisted of a square, 4.6 by 4.6 m, structure with beach rock cleared from the living floor and stacked to form side walls between 30 and 46 cm in height above the floor. Elongated stone lined pits, about 30 cm deep, extended along one axis of the house and may have functioned as hearths. Evidence of the use of oil burning lamps is recorded as well as random charcoal concentrations across the house floor. A likely sleeping area at the back of the dwelling consisted of a stone platform elevated approximately 30 cm above the floor that also contained deep storage pits. The size of such structures suggest two family dwellings and the density of cultural debris "...prolonged or repeated occupation..." (Harp 1976: 134). One winter house, House 2, for example, may have been occupied repetitively anywhere between 200 and 400 years. An example of a summer dwelling consisted of a depressed oval, measuring 3 by 5.5 m, where rocks had been partially removed to prepare the living floor. Peripheral rock walls were lacking as were interior hearths or other features. The thin distribution of artifacts and other refuse suggested a two family or extended family occupation of limited duration.

Cosmology:

On the basis of the cosmological beliefs of extant northern peoples it has been speculated that the Palaeo-Eskimos probably believed in a cosmos composed of four layers: a sky-world; the world of earth-ice-water occupied by humans and familiar animals and plants; an under-sea world; and an underworld beneath the foregoing. Powerful supernatural forces occupied all of these worlds (McGhee 1996: 157). Only shamans could travel to the other planes of the cosmos and, with the aid of spirit helpers, could affect benefits for the community. In this regard, "...the shaman functioned as the doctor, priest, and seer of the small communities of humans scattered across the Arctic World" (Ibid: 158).

Middle Palaeo-Eskimo people probably disposed of their dead by exposure (Taylor 1968: 79) or some other method that left little or no archaeological trace. Only on the Island of Newfoundland have a number of burials been found in the limestone cliff crevices. Further north occasional features that probably once represented graves have been reported but contain little in the way of human remains. For unknown reasons jaws seem to be better represented than any other part of the human body. The Alarnerk site, at Igloolik on the northern end of the Melville Peninsula, contained a number of graves. Most of the burials are undated and consist of rectangular to circular pits containing decorated objects as well as broken and unfinished items. Most of the graves had been disturbed by later Inuit in the construction of meat caches. One undisturbed grave, believed to be the oldest, consisted of a gravel mound that had been erected 0.6 m over a 0.8 deep pit containing some scattered grave offerings, the jaw of a child, and a single adult longbone. On the original ground surface adjacent to the grave pit was a 1.2 by 1.2 m area containing a small hearth, burned animal bones, and a deposit of red ochre in the centre. Beside the hearth were the upper jaw of a walrus, 'halved' walrus tusks, and rib bones. On the margin of the square area were a number of offerings including a 26 cm long wooden handle with unworked microblades paralleling each side (Meldgaard 1960: 589-590). Of a more sinister note was the discovery made at the Skull site in the Port Refuge area of the High Arctic (McGhee 1981a: 14). The Independence II site was named after a human skull, lacking its face, that was laying on the surface of the ground and bore the marks of bear canine perforations. Four metres away was "...a small box-like structure built of vertical rock slabs" (Ibid: 14). At the Tyara site on Sugluk Island, off the northern coast of Québec, a feature contained three carved bears with the common etched skeletal motif, two of which were enclosed in an ivory sheath, in association with a human jaw and three ribs, the whole suggesting the remains of a possible shaman grave.

A number of burials placed in caves and crevices in the limestone cliffs of Newfoundland and dating to Period IV have unfortunately all been destroyed by curio seekers. Such burials usually contain a number of individuals as well as numerous offerings to the deceased (Anderson and Tuck 1974). Near Port au Choix on the west coast of Newfoundland in Gargamelle Cove, for example, Dorset graves included four infants and four to five adults who had been provided with a wide range of offerings that included harpoon parts, some of which appear to have been broken prior to placement in the graves suggesting animistic beliefs, an amulet box, amulets, and other symbolic carvings such as miniature walrus tusks and bears. Another burial at Cow Head, also on the west coast, contained one adult and three children. Human remains in such burial sites appear to have been incomplete suggesting secondary interment. Sometimes the grave crevice containing the bodies was sealed with rocks. Grave offerings can be represented by both utilitarian and religious objects like amulets. Animal remains, such as fox and seal, also occur but given the disturbed nature of the burials it is uncertain if they represent offerings.

Deviating from the foregoing was a single burial from a late Period IV house in the Port au Choix 2 site, Newfoundland. Here a tightly flexed, less than two year old infant was buried upright in a pit within the central house passage. Artifacts and an adult jaw bone were found scattered in the pit fill which was then capped with a stone slab. Offerings included unworked antler and bone, end scrapers and knives, a broken harpoon tip, a sucking tube made from a wolf or dog leg bone, an antler spoon, perforated seal and beaver teeth, and a bone effigy (Harp and Hughes 1968: 17-18). A charcoal concentration was discovered beside the infant and may represent the remains of a ceremonial fire.

Palaeo-Eskimo art, particularly that of Middle and Late Palaeo-Eskimo culture, has attracted the attention of archaeologists and art historians alike. Dorset art has been interpreted as depictions of spirit helpers and "...concerned with supernatural matters - with shamanism, burial practices, sympathetic magic" (Taylor in Taylor and Swinton 1967: 16). George Swinton, an art historian who considered Dorset art from the point of view of both content and style, believes that there is a "...common ancestry of Okvik, Ipiutak, Dorset, ancient Aleut, as well as early northwest coast Indian art" and that "...the art expressions of earlier cultures indicate a greater coherence than do the various tool and weapon industries" (Swinton in Taylor and Swinton 1967: 7). Palaeo-Eskimo art correlations with the West coast are etched skeletal designs, joint marks, figures depicted with an open mouth, and human-animal transformations. In an examination of Dorset carvings spanning both Period IV and V, the 151 examples consisted of the following forms: human - 33%; bear - 20%; seal - 13%; bird - 11%; walrus - 10%; and caribou, fish, weasel, and unclassified - 11% (Taylor in Taylor and Swinton 1967: 10). From the foregoing it is clear the art is dominated by images of humans and sea mammals, particularly the polar bear that is most appropriately classified as a sea creature. The bear was likely the most important spirit helper and is usually depicted in a flying or floating position. This very distinctive art style is widely distributed, suggesting religious considerations that required form and content compliance although the stylized carvings of bear and seal from Newfoundland, where the usual naturalistic three-dimensional forms were rendered in two-dimensional form, represent a regional style (Tuck 1976a: 98). Objects are usually carved in antler, ivory, wood, and more rarely, soapstone. As

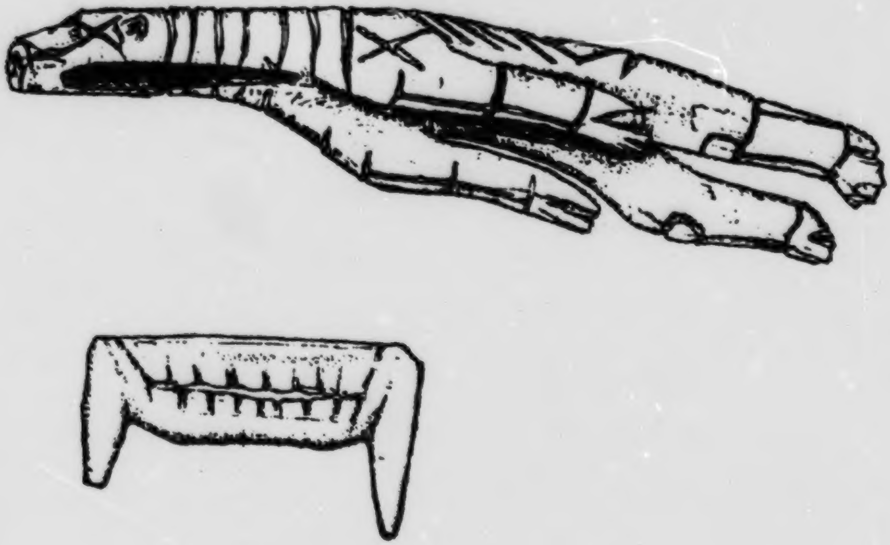


FIGURE 106: MIDDLE PALAEO-ESKIMO CULTURE SHAMAN PARAPHERNALIA
Both the 'floating' polar bear and the 'shaman teeth' are from the Alarnerk site at Igloolik and would date to the middle portion of Period IV. The bear, with the common etched skeletal motif and joint marks, also had a slit beneath the throat containing an ivory splinter. The object very likely represents a shaman-helper amulet. Shaman teeth are believed to have been worn in the shaman's mouth during ceremonies and some of the objects even exhibit human incisor marks on their interiors (Drawings by Mr. David W. Laverie. Scale: variable)

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the majority of the art objects from the exceptional Button Point site on Bylot Island off Baffin Island pertain to Period V they will be considered in Volume III. Suffice to note that exceptional preservation of wood at this site has permitted the recovery of shaman masks, and animal and human carvings ritually killed by having a sliver of wood inserted into a lethally located slot in the carving (Taylor in Taylor and Swinton 1967: 18). Carvings frequently have a hole at one end indicating that they were suspended, perhaps to clothing as an amulet. Tiny harpoons, often less than 1 cm long, are replicas of functional harpoons and have been interpreted as possible magic weapons sucked from patients or use to kill by magic (McGhee 1996 170-171). Finally, the so-called needle cases, usually manufactured from the base of a walrus tusk and having carved animal and human depictions, are now being interpreted as shaman boxes used as containers for magical objects.

In the northern Québec, near Wakeham Bay on Hudson Strait, a number of Palaeo-Eskimo petroglyphs of stylized human faces had been carved into the soapstone cliffs (Saladin D'Anglure 1963). While such archaeological features still defy most efforts to date them, the stylistic form of the faces rendered on the cliffs suggest that they pertain to Period IV Middle Palaeo-Eskimos.

The use of colourful or distinctive types of stone for tools in Palaeo-Eskimo culture may have had symbolic significance such as the use of quartz crystal for microblades. Exotic stone and metal as possible magical traits "...may explain why certain scarce materials were traded and used over such wide areas, when local materials of apparently equal usefulness were available" (McGhee 1996: 140). At the Groswater complex Phillip's Garden East site on the Island of Newfoundland the abundant Cow Head chert

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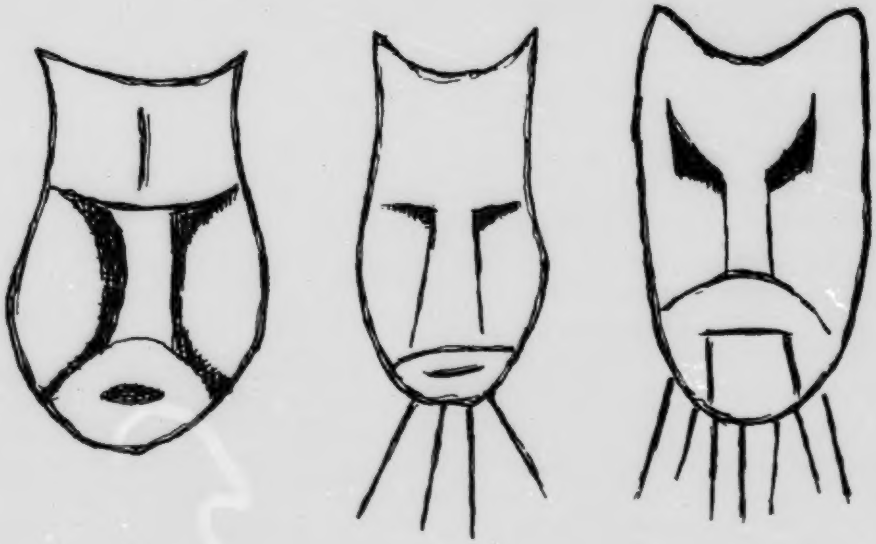
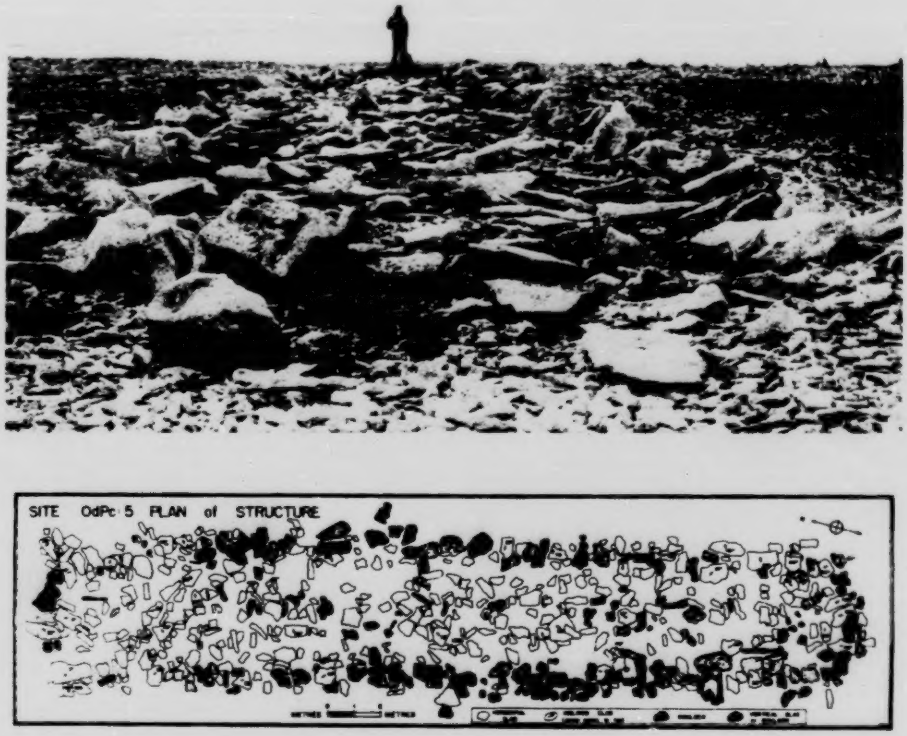


FIGURE 107: MIDDLE PALAEO-ESKIMO PETROGLYPH IMAGES FROM NORTHERN QUÉBEC The peaks or horns at the top of the images are frequently explained as symbols of shaman power in many northern regions of the world. (Drawings by Mr. David W. Laverie. Scale: variable)



BLACK AND WHITE PLATE XXXXIII: MIDDLE PALAEO-ESKIMO CEREMONIAL (?) LONGHOUSE This longhouse is the only one so far that appears to date to Period IV. All of the rest, in places like Ungava Bay in northern Québec and northeastern Ellesmere Island in the High Arctic, have been assigned to Late Palaeo-Eskimo culture and Period V. A floor plan drawing of the structure is shown below the photograph (Reproduced from McGhee 1978: Plate 10. The person at the end of the longhouse provides an approximate scale)

has a very wide range of colours but only the red, brown-grey, and grey-blue coloured materials were favoured (Renouf 1994: 174). Eight instances are recorded from several early Dorset houses at Igloolik of unbroken bearded seal skulls being buried below the house floor and "...placed two and two close together, always placed exactly parallel to one of the axes of the house" (Meldgaard 1960: 589). At the Groswater complex Factory Cove site on the west coast of Newfoundland a storage pit contained animal bones covered with red ochre (Auger 1986: 112). The significance of this feature is unknown but it would appear to have been ceremonial.

Structural features that were likely ceremonial in nature are the longhouses of the Arctic. Such structures generally pertain to Period V and Late Palaeo-Eskimo culture but one from the Central Arctic has been dated to the end of Period IV. This structure on the west coast ofVictoria Island measured 32 by 7 m and had walls constructed of large boulders and slabs. Evidence of a roof was lacking and relatively few artifacts were discovered in the interior. A number of similar Period V longhouses have been reported from the High Arctic (Maxwell 1985: 157; Schledermann 1990) and northern Québec on Hudson Strait (Plumet 1985). For a particularly detailed study of the longhouse features see Plumet (1985). Of interest is the fact that, no matter where they occur in the Arctic, the longhouses appear to have a consistent width of 7 m suggesting that a prescribed construction formulae was being applied. Adherence to such a construction constraint is more likely to stem from religious as opposed to secular considerations.

External relationships:

Among the number of striking characteristics of Palaeo-Eskimo culture is the paucity of evidence pertaining to contacts with neighbouring people of different cultures. Such contacts are usually recognized in the form of exotic goods with known geological or biological origins, artifacts diagnostic of other cultures, and, more tenuous, the identification of technological or religious exchanges. Such evidence is virtually none-existent in Early, Middle, and Late Palaeo-Eskimo culture. Certainly opportunities for face-to-face contacts with Indians existed along the margins of the Barrengrounds west of Hudson Bay and particularly along the Labrador coast, the northshore of the Gulf of St.Lawrence, and possibly the Island of Newfoundland. The situation would suggest that Palaeo-Eskimos were in a hostile relationship with their neighbours. This may also explain why Middle Palaeo-Eskimos avoided interior regions which were being exploited by Indians with Late Eastern Shield or Late Northwest Interior cultures. Exchanges undoubtedly took place but they may have been more of an indirect, observational nature rather than due to direct physical contact. For example, it was speculated that towards the end of Period III there was a technological exchange of the Early Palaeo-Eskimo bow and arrow weapon system for the composite toggling harpoon paraphernalia of Middle Maritime culture. Hostile contacts between the people of these two cultures would certainly have convinced the warriors of the latter culture of the benefits of the bow and arrow in any conflict. Similarly, the benefits of the toggling harpoon system would have been readily apparent to maritime hunters regardless of cultural background. Whatever the nature of culture contacts between Middle Palaeo-Eskimos and their neighbours they have not left much of an archaeological record. There is not even significant evidence of exchanges in raw materials that lend themselves to the relatively safe process of silent exchange whereby face-to-face contacts are avoided but goods are still exchanged. Certainly, on the basis of the admittedly limited physical anthropological evidence available there is no evidence of racial hybridization (Harp and Hughes 1968: 46).

While Middle Palaeo-Eskimo cultural contacts with their Indian neighbours appear to have been practically nonexistent, contacts with other people who participated in the same Arctic Small Tool tradition were pervasive. These included the Choris-Norton complex people of northern Alaska and coastal Yukon. Alaskan traits, such as ground burins, polished slate knives, stone oil lamps, and possibly the subterranean dwelling, appear to have spread eastward through intermediaries. The indigenous Lagoon complex of the Central Arctic, for example, while exhibiting predominantly Dorset features, also adopted Alaskan traits (Arnold 1981; LeBlanc 1991: 72-73). Some of the adopted features were quite specific, such as certain harpoon attributes like lashing slots, asymmetrical and ovate side blades, engraving and drilling tools, and motifs including paired line spirals (Arnold 1981: 315-316). Further, "...the distribution of this interesting cultural amalgam is rather widespread in the western Arctic" (LeBlanc 1991: 73). Relationships between people in Alaska and the Central Arctic appear to have had a long history. The combination of Debigh Flint complex and Pre-Dorset complex traits during Period III at the 1,700 BC NbJj-8 site on the Anderson Plain to the east of the Mackenzie River (Pilon 1991: 104-105) suggests that the archaeological gap between cultural developments in Alaska and Canada may be more a product of current archaeological knowledge than historical fact. At the opposite extreme of the Middle Palaeo-Eskimo cultural distribution, the decrease in evidence for a Dorset complex occupation along the Labrador coast around AD 200 has been attributed to both Indian coastal incursions (Late Eastern Shield culture) and natural disasters (Tuck 1976: 101). Two hundred years earlier it has been speculated that Indian pressure on the central coast of Labrador split the Dorset occupation and eventually excluded them from Hamilton Inlet and southern Labrador (Fitzhugh 1976: 116). Such a hypothesized, but undemonstrated, Indian presence has been used to suggest that the Dorset people on the Island of Newfoundland were eventually isolated on their Island from contacts with other Palaeo-Eskimos to the north (Harp 1976: 138).

Despite the foregoing, there are a few pieces of direct archaeological evidence of some form of contact between Middle Palaeo-Eskimos and their Indian neighbours. What appears to be an early Dorset complex multiple side-notched point was recovered from the Ruisseau B site on the Gaspé coast of Québec that would have pertained to the local Late Maritime culture occupation (Benmouyal 1987: Planche 55, fig.a, 264). A possible Dorset triangular point has also been reported from the Îles de la Madeleine in the Gulf of St.Lawrence (McCaffrey 1986: 125 & 144). In excellent archaeological context was the recovery of an AD 500 Point Peninsula complex pottery vessel rim from a stratified Dorset site in southern Newfoundland (Penny 1981). In this instance, the pottery vessel was probably being used by Late Eastern Shield culture people, who occupied portions of the northshore of the Gulf of St.Lawrence, rather than Late Great Lakes-St.Lawrence culture in the interior from which the pottery style originated.

Middle Palaeo-Eskimo resistance to external influences has been attributed to a tightly constrained cultural system (Nash 1976) that shunned any foreign cultural contamination. As already noted, this cultural attitude had no effect on close interrelationships with other Palaeo-Eskimo peoples. For example, in the Bache Peninsula of northeastern Ellesmere Island Saqqaq people from adjacent Greenland had a strong influence on the nature of the Pre-Dorset to Dorset technological transition (Schledermann 1990: 325).

Human biology:

The limited human skeletal remains that can be attributed to Middle Palaeo-Eskimo people exhibit a relationship with later people of both the Arctic and northeastern Siberia. Thus, Dorset skeletal evidence is attributed to "...the Arctic Mongoloid morphological pattern" (Oschinsky 1964: 32). Dorset burials from the Island of Newfoundland between 500 BC and AD 500 have also been attributed to the Arctic Mongoloid stock to which the present day Inuit belong (McGhee 1978: 70). Dorset burials in the Port au Choix area even had the short forearms characteristic of Inuit longbone proportions (Harp and Hughes 1968: 42). A stone vault burial containing an adult male on the Imaha site off the coast of northern Québec (Laughlin and Taylor 1960: 13) is more likely to pertain to an Inuit than a Palaeo-Eskimo (Collins 1962: 131). This possibility was recognized by Taylor in his use of the site name "Imaha", which in the Inuit language means "maybe". Of undoubted Palaeo-Eskimo origin are human jaws from Dorset middens at sites on Sugluk and Mansel islands off the northwest coast of Québec (Oschinsky 1960; Taylor 1964a). Some jaw pathology was identified consisting of ante mortem tooth loss, slight evidence of periodontal disease, and hypoplasia (Hughes 1969). Hypoplasia, identified by characteristic grooving in the teeth, is generally attributed to nutritional stress, particularly at the time of weaning. At the Crow Head site which, like the Gargamelle Cove site, was probably associated with the nearby Port au Choix habitation site, an instance of cribra orbitalia was reported for one of the children. This pathological condition is indicative of severe anaemia. Five heavily weathered humans skulls from the T-1 site on Southampton Island, possibly pertaining to early Dorset, are morphologically and metrically 'Eskimo' (Collins 1962: 132).

Inferences on society:

It has been speculated that Palaeo-Eskimo social structure was similar to that of the historically documented Inuit. This consisted of a number of regional bands, but in the Palaeo-Eskimo case likely was represented by smaller and more widely distributed communities than those of the Inuit. Regional bands are estimated to have been between 200 and 300 people (McGhee 1996: 121-125). Speculations regarding past human demography is very much a matter of scale and "...in AD 1800 there may have been between fifty Inuit bands between the Mackenzie River and the Atlantic coast. On the other hand, in 1800 BC or 80 BC only ten or twenty Palaeo-Eskimo groups may have occupied the same area" (Ibid: 123). Away from the Core area it has been proposed that Palaeo-Eskimos were organized into bands of between 50 and 100 people who occupied a recognized territory but had relationships with adjacent and related bands. This could have resulted in a maximum breeding population of between 500 and 1,000 people (McGhee 1976: 37). Given the mobility of the people involved and the likelihood of personal freedom of movement as suggested by shared elements of technology and cosmology, any concept of band territories is likely to have been more amorphous than usual among hunters and gatherers. Presumably women from other bands would join the community of their husbands since the hunter not only had to be intimately familiar with the food resources of an area but would also require the assistance of other men in the hunt. The woman's role in the society, on the other hand, was community based and thus more readily transferable from one community to another. With specific reference to relationships between the Central Arctic and the Eastern Arctic it has been observed that "...the very close similarity in the discrete attributes of both lithic and nonlithic artifacts between these sites and those of the Foxe Basin-Hudson Strait area points to close and continual information exchange between the two areas" (Maxwell 1985: 189), but it should be emphasized that these close interrelationships were most likely bonded by marriage. Blood ties would have undoubtedly strengthened the requirement for mutual support that acted as an effective form of life insurance. It has already been noted that Palaeo-Eskimo culture was a closed system to most outsiders but that the archaeological evidence clearly indicates this exclusion did not apply to other Palaeo-Eskimo communities.

At the Port au Choix 2 site on the western coast of Newfoundland, as well as elsewhere, dwelling size and arrangement suggest occupation by either an extended family or two nuclear families involving, on average between six and seven individuals. Both winter and summer dwellings are about the same size indicating some seasonal continuity in the number of occupants (Harp 1976). Larger houses point to occasional larger grouping of people than just two families. In the case of the extended family, such a generationally constituted family group in a single dwelling is similar to the historically documented Inuit pattern (Ibid: 137).

Some winter communities could achieve sizable proportions. At its peak the Port au Choix 2 site occupation has been estimated to have been 60 people (Harp 1976: Table 4). It has been speculated that in the winter walrus and seal hunting camps, like Alarnerk and Kapiuvik in the Igloolik area, population size may have reached 100 and been equivalent to that of later Inuit occupants (Maxwell 1985: 183).

Limitations in the evidence:

Arctic archaeology faces similar problems as other areas of Canada. Site destruction in the Central Arctic due to coastal subsidence, component mixture due to repeated occupations representative of thousands of years, and massive economic developments like the James Bay Project in western Québec. As elsewhere, there has been a tendency for archaeologists to focus on finished tools and ignore debitage although this limitation is now being addressed (LeBlanc 1994: 117; Plumet 1980). There has also been limited experimental archaeology and use-wear studies to test functional assumptions regarding tool use. Arctic archaeology, however, does face some unique problems. Exposure of the land surface is quite variable. In the High Arctic human settlement is readily apparent from surface indications and is often identifiable as discrete components while further south, such as in Baffin Island, dense vegetative cover has not only concealed the archaeological evidence but repetitive occupations have mixed components. Acid soils in many areas of the Arctic have complicated comparisons. Relatively few Early Palaeo-Eskimo sites, for example, have produced bone materials and yet some of the major characteristics used to distinguish Early Palaeo-Eskimo from Middle and Late Palaeo-Eskimo sites have been based on organic artifacts. The likelihood of winter encampments on the sea ice in snow houses removes an entire segment of the seasonal rounds. This is not unique to the Arctic for, as was noted in Chapter 25 considering Late Western Shield culture, the winter portion of seasonal occupation appears to be absent and could well be a product of the historically documented practice of placing winter camps on streams joining a river in order to take advantage of the benefits of a ready made frozen highway for winter travel. Archaeological evidence is based upon physical objects that survive the passage of time but any review of the ethnographic record indicates how very incomplete such a record can be. The flimsy Palaeo-Eskimo tent rings recorded by the archaeologist could actually represent the remains of a skin tent enclosed in snow blocks and have been a far more substantial and comfortable structure than the remaining physical evidence alone would suggest. There has been some tendency in Arctic archaeology to equate the lack of direct archaeological evidence with an actual absence.

Examples are watercraft, the bow and arrow, and the spearthrower. Indirect evidence of important elements of technology, however, can often be inferred from evidence such as site location. Numerous sites are situated in places requiring not only watercraft but a sophisticated knowledge of open water seamanship. Ethnological studies of Inuit people have provided a rich body of data which has been extensively used by archaeologists. Ethnographic analogy, however, must be used with considerable caution and not only with reference to Palaeo-Eskimos but also the immediate ancestors of the eastern Inuit, the Thule complex.

The problem of radiocarbon dating of marine mammals remains and old drift wood has already been discussed (McGhee and Tuck 1976; McGhee 1987a). An object lesson was the radiocarbon dating of nine different varieties of organic materials from the floor of a single Dorset house which gave a range of 910 radiocarbon years (Maxwell 1989 a: 164). Dating of sites on the basis of their position on elevated marine beaches also has problems. Not nearly enough attention has been directed to finger-printing exotic lithics to their geological sources by chemical and morphological means and, yet, this is exactly the kind of analyses that will provide information on the intensity and direction of human contacts in the Arctic. Technological correspondences clearly indicate that there was an unusual degree of communication between the various bands making up Middle Palaeo-Eskimo culture.

There is a major classification problem with reference to Palaeo-Eskimo culture. Classification of Arctic cultures, complexes, and traditions has not been standardized, either in terms of its nomenclature or the principles upon which the various classifications were established. It has been long recognized that Arctic archaeology has taken a "...laissez-faire attitude towards its terminology..." (Taylor 1968: 38). The lack of consistency and consequently consensus in classification has been exacerbated by too great a reliance on artifact styles to arrive at classificatory constructs. A practical solution to the problem has been recently proposed (Helmer 1994). Helmer's classification system is hierarchical, starting with the Arctic Small Tool tradition under which two Technological Sub-traditions called Early and Late Palaeo-Eskimo are placed and beneath these two Cultural traditions, Pre-Dorset and Dorset. The latter units are then composed of a number of horizons. For example, for the Dorset Cultural tradition the horizons from early to late are called transitional, early, middle, and late (Helmer 1994: Figure 1). Such a ranking of the levels of abstraction provides a clear and consistent ordering of the degree of generalization being addressed. Obviously, in a nationally oriented synthesis such as the present work, the level of generalization is at the top end of any hierarchical scheme. In the approach used in these volumes Helmer's Pre-Dorset Cultural tradition equates with Early Palaeo-Eskimo culture of Volume I, his Transitional, Early, and Middle horizons of the Dorset Cultural tradition with Middle Palaeo-Eskimo culture of this Chapter, and the Late Horizon of the same cultural tradition with Late Palaeo-Eskimo culture of Volume III. Helmer's system also allows for regional cultural variants and subtraditions and thus is quite amenable to future refinement and adjustment (see Helmer 1994: Figure 2). One could certainly question the utility of establishing two cultural traditions that are more appropriately treated as time segments within a single developing tradition (see Nagy 1994). There is no doubt, however, that Helmer's approach would dramatically improve consistency in both nomenclature and specificity regarding the level of generalization being addressed. It is essential to clearly distinguish between broad spatio-temporal classification levels and specific, regional classifications. Regional cultural variability certainly existed and represents an important component of Middle Palaeo-Eskimo culture but it occurred within an all-encompassing common cultural framework. As Helmer notes, for his classification system to be effective requires a much more detailed regional data base. The critically important Igloolik record of human occupation, amassed nearly forty years ago (Meldgaard 1962), for example, is still not available in the detailed descriptive form so essential to the archaeological comparative process.

The concept of a Core area of Palaeo-Eskimo development, while still of utility, requires considerable qualification and refinement. For critical assessments of the Core area concept see Biewalski (1988), Cox (1978), and Schledermann (1990). The core area concept hinges on the belief that marginal areas are characterized by long breaks in occupation. However, gaps such as that between Pre-Dorset and Dorset in the Central Arctic are being filled by new research (Arnold 1981: 25). An important part of refining our appreciation of the relationships between various grouping of Palaeo-Eskimos requires that "...we must systematically analyze the functional and stylistic attributes of artifacts, features, and sites" (Biewalski 1988: 58). It has also been noted that "...although the core area played a major role in the Pre-Dorset/Dorset transition, the evidence from Labrador, southern Baffin Island, and the Bache Peninsula region strongly indicates that the transition was considerably more complex and regionally distinctive than originally envisaged" (Schledermann 1990: 325). Schledermann also suggests that the transition into Dorset from Pre-Dorset was a smooth process that lacked major cultural changes (Ibid: 4), a view apparently supported by Nagy (1994). It is apparent that many Arctic archaeologists recognize that the lack of classificatory consistency is causing serious communication problems and attention is now being addressed to this difficult but extremely important issue. In a revised classification of the Palaeo-Eskimo sequence in Labrador and Newfoundland, for example, it is suggested that Early Palaeo-Eskimo be placed between 2,500 BC and AD 1 and include the Independence I, terminal Pre-Dorset, and Groswater complexes and be differentiated from Late Palaeo-Eskimo which would include the early, middle, and late Dorset people who first appeared in northern Labrador as an intruding migration from the north around 700 BC (Tuck and Fitzhugh

1986). Thus, there would be two major Palaeo-Eskimo migrations into Labrador-Newfoundland. It is noted that "...since many of the terms used to refer to Palaeo-Eskimo complexes carry cultural-historical implications, they can confuse our understanding of these cultures beyond the mere welter of names" (Ibid: 161). There is still disagreement between the two foregoing archaeologists regarding the evidence of continuity versus discontinuity between Groswater and Middle Dorset (Ibid: 166). At an even more general level it has been proposed that two grand classifications of Palaeo-Eskimo be employed composed of subunits e.g. a Paléotunnit category that is divided into pre-dorsétiennes and a Neotunnit category divided into Indepéndancien II and Dorsétien (Plumet 1986). As an overall classificatory approach that has the potential to meet all requirements the one proposed by Helmer (1994) would appear to hold the greatest promise at this time.

PROLOGUE TO VOLUME III

Volume III represents the final volume in this series and encompasses the time span from AD 500 to European contact. The period of European contact requires qualification. At the beginning of the 11th century the Norseman Leif Erikisson from Greenland explored the eastern coast of Canada. Colonies were eventually established in Vinland, now believed to be the Island of Newfoundland. The short-lived Norse settlement of L'Anse aux Meadows on the tip of the Great Northern Peninsula of Newfoundland was discovered by the Norwegian Helge Ingstad and was eventually excavated, preserved, and reconstructed by Parks Canada. At the end of the 15th century John Cabot's explorations of Newfoundland and the Strait of Belle Isle were followed by European fishermen from a number of nations who came to harvest the rich fish resource, particularly the codfish. By the time Jacques Cartier explored up the St.Lawrence River as far as the present city of Montreal in AD 1535 there would already have been a flourishing fishery further to the east in the Gulf. In the latter half of the 16th century European forays to the east coast of Canada included Martin Frobisher's mining expedition to the Baffin Island in the eastern Arctic and Basque whalers from the Bay of Biscay who began hunting large whales for their oil in the Gulf of St.Lawrence region. For an excellent summary of the early European exploration of eastern Canada see McGhee (1991). Serious European incursions into eastern North America including Canada, however, were not realized until early in the 17th century. The spread of European influences in the form of trade, disease, and settlement progressed westward slowly and did not extend into areas of the far northwest until early in the 20th century. Thus there is a definite time line attached to the term 'European contact' that runs early in the east to late in the west and, in particular, in the northwest.

As one proceeds through time in the pre-European archaeological history of Canada information expands exponentially. Volume I considered the more than 9,000 years involved with Periods I to III (10,000-1,000 BC) while Volume II, of approximately the same size as Volume I, dealt with the 1,500 years of Period IV (1,000 BC-AD 500). Volume III will consider Period V (AD 500-European contact), or a little more than 1,000 years.

During Period V, with one major exception, cultural continuity continues from Period IV and at the end of Period V the archaeological cultures enter the era of European written documentation with the identification of tribes, bands, lineages, clans, confederacies, individual personalities, languages, and the innumerable aspects of human culture that cannot be captured by archaeological means. There were three major human events that took place in Period V prior to the appearance of Europeans. In the Arctic there was the migration of the ancestors of the present day Inuit out of Alaska who eventually occupied most of the territories formerly occupied by Palaeo-Eskimos. In the process Late Palaeo-Eskimo culture disappears shortly before the time of European contact. In the Lower Great Lakes and upper St.Lawrence River valley region a horticultural revolution took place that led to the Iroquoian farmers of the contact period. For the first time in Canada large farming villages evolve supported by the growing of corn, beans, and squash. People occupied longhouses of impressive dimensions surrounded by palisades. On the West Coast the inception of social inequality within communities reflected in ranked societies noted towards the end of Period IV achieves its final development. The large plank houses, sea-going dugout canoes, monumental art in the form of commemorative poles, elaborate ceremonialism including the potlatch, and the vast array of other cultural facets that have made the people of the West Coast a topic of interest to scholars from earliest times all appear to be in place during Period V. The culture of the West Coast is unique in the sense that the exceptionally rich food resources, salmon in particular, and the development of sophisticated harvesting and storage methods and the military ability to exert control over resource areas permitted a non-farming society to achieve such a high level of cultural development. With the foregoing three exceptional circumstances cultural developments across the rest of Canada continued the trends noted during Period IV. Little in the way of startling archaeological events are apparent in the Maritimes or across the vast expanses of the Subarctic from Labrador to the Yukon except for a southern migration of groups of Athabascan-speakers into the Canadian Plateau around AD 700, an event that can be correlated with volcanic ash fall-out in the southern Yukon. On the Plains the communal hunting of bison is perfected and there is evidence of closer contacts with the farming villages of the Missouri Valley including some marginal introduction of corn farming. There is still debate whether the Siouan-speaking Assiniboine and Algonquian-speaking Ojibway and Cree penetrated deep into the Plains during pre- or post-European times. The pit house villages, largely dependant upon salmon, deer, and roots, continue to flourish with clear indications of population increases. For the most part, however, the way of life across the land flowed gently from Period IV into Period V.

Wherever the European colonizers, explorers, missionaries, and trappers went in Canada they encountered people who had occupied the land for thousands of years. At the time of initial European contact 12 language families existed that were composed of numerous languages. For the natives the intrusion of the newcomers was to be a disaster of unparalleled dimensions. Up to 80 percent mortality due to introduced European diseases against which the natives had no immunity left the remnants relatively helpless in the face of an alien political and economic system. Instead of being absorbed by the white community as was anticipated not that long ago, however, natives have prevailed and are beginning see results in their long battle for social justice.

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GLOSSARY

An effort has been made to define potentially unfamiliar words and concepts as they appear in the text but for those instances appearing throughout the Volume placement in the glossary was deemed useful. Most of the following words and phrases pertain to archaeological artifact categories, physical anthropological, and geological words and expressions. As it is suspected, or at least hoped, that readers of Volume II also possess Volume I, items in the glossary of that volume are not repeated here.

antler wedges - also manufactured from bone, wood, and sometimes polished stone, these tools used for splitting wood to produce planks are to be distinguished from the chipped stone wedges which functioned as a form of rudimentary burin.

ascribed status - pertains to an individual's status in a community that is inherited rather than earned as in the case of achieved status.

barbs - small bone implements with one end ground to a sharp point. In most instances, these objects were likely the barb of a composite fishhook.

bark shredder - a specialized tool found on the West coast and used to separate the fibres in bark as an initial stage in the production of cordage and eventually fabrics. Shredders can be manufactured from whale bone or stone and frequently have a large hand-hold cut into their upper edge.

barstone - a rarely encountered ground stone implement, usually associated with the Meadowood mortuary complex of Late Great Lakes-St.Lawrence culture. Related to the boatstone and birdstone but, unlike the preceding, in place of perforations at either end, two projections served to haft the object to a shaft. Barstones were probably ceremonial spearthrower weights.

bast - the inner lining of bark whose fibrous nature makes it ideal for twisting into the cordage used in the production of fabrics and numerous other products.

beamer - an archaeological term for a specialized bone tool that is used to scrape fat and tissue from a hide stretched over a beam.

beaver incisor tools - the incisors of beavers and other large rodents, like porcupine and marmot, were frequently ground in various fashions at their bit edges to produce a range of knives and chisels. Such items were sometime hafted in specialized antler handles.

birdstone - as with the boatstone and the barstone, the birdstone likely functioned as a ceremonial spearthrower weight. In Late Great Lakes-St.Lawrence culture it is generally found in burial situations pertaining to the Meadowood mortuary complex. As with the boatstones, they are also recorded from the Adena mortuary complex. Fashioned from polished slate in the form of a bird, perforations at either end would have permitted hafting to a shaft.

bone beads - common across the entire country, these ornaments were produced by scoring a hollow bone, usually bird bone, snapping it and then grinding and polishing to finish the product.

bone grainer - invariably manufactured from porous bone, grainers are believed to have been used in hide preparation. They are only typical of Plains cultures.

boatstone - manufactured of polished stone, usually banded slate, or even copper, these ceremonial objects are almost invariably recovered from burials. One flat face is deeply hollowed-out with the opposite face having a keel shape and, thus, the name. Two perforations for hafting to a shaft occur towards either end. Boatstones are found in the Adena mortuary complex in Canada and also occur, in a more elaborate form, in the Hopewell mortuary complex south of the border. Boatstones, along with the birdstones, and barstones, likely represent the last expression of the spearthrower weight in eastern North America.

bone spatula - the function or functions of these awl-like objects with a flat ground end is uncertain. They could have been used for a wide range of purposes, such as extracting marrow, applying paint, and even as arrowheads.

caries - localized tooth decay called cavities.

catadromous - refers to fish that live their adult lives in freshwater but return to the sea to breed and grow to the juvenile stage; the reverse of anadromous fish like salmon. The American eel(*Antuilla rostrata*) of eastern North America is an example of a catadromous fish species.

complex - a word used as a classificatory convenience to describe all of the following: a regional or temporal variety of a culture; a poorly understood cultural assemblage; and different mortuary systems. It is definitely a catch-all device with the intended purpose being indicated by the context in which it is used. While such an imprecise word runs contrary to the normal precision expected in science, it does recognize the fact that archaeological data are never complete and, thus, the classifications needed to control the masses of evidence are always, to vary degrees, premature and subject to future modification.

concretion - objects that come in a range of unusual shapes and are produced naturally in solution channels in sedimentary rock. Like fossils, crystals, and other objects of unusual shapes or materials, they were likely treated as a form of amulet as they can often be found in graves.

connubium - an anthropological term to refer to a number of independent groupings of people, such as bands, who intermarry and, thus, establish an extended kinship network.

cord malleated - this refers to a common pottery surface texturing technique realized by paddling the wet surface of a pottery vessel during the manufacturing process with a wooden paddle or hand wrapped in a series of horizontally oriented plant fibre cords.

cord-wrapped stick - a common pottery decorative technique involving a stick or other rigid object with a cord twisted around it which was then impressed into, or dragged across, the wet clay surface of a pottery vessel to form decorative motifs.

dentate stamp - a pottery decorative impression realized by a notched stone, bone, or wooden tool that leaves lineal rows of repetitive square or rectangular impressions. Other methods of application would leave different impressions on pottery vessels.

diachronic - pertaining to cultural or linguistic events as seen through time.

diffusion - a process whereby elements of technology, religious beliefs, and other ideas spread from one culture to another. Direct diffusion pertains a direct transfer, such as the spread of the horse and the gun during the period of European contact. Stimulus diffusion refers to a process whereby the idea for an element of technology, such as pottery manufacture, is transferred from one culture to another but the recipient culture translates it into a form quite different from that of the original donor culture.

ear spools - manufactured of stone, copper, silver, and once probably wood, these ornaments were inserted in a slit in the ear lobe. They were probably indicative of status and are only recorded from Late West Coast culture and Late Great Lakes-St.Lawrence culture in Canada during Period IV. In both areas, ear spools likely diffused originally from Mexico.

ecosystem - an interacting biological community of organisms and their environment.

ecotone - a transitional region between two ecosystems.

end blade - a term largely restricted to Arctic cultures, it refers to any chipped or ground stone point that is believed to have been hafted in the end of a toggling harpoon.

fabric impressed - during pottery vessel manufacture, surface texturing of the vessel was sometimes realized with a cloth, usually represented by a twined fabric. When the vessel is fired the impression is preserved and leaves a reverse impression of the original fabric permitting archaeologists to determine what kind of fabric was used, the number of strands composing the cord, and other detailed information relating to the complex processes of fabric manufacturing.

felsite - a fine grained igneous rock suitable for fashioning into tools by chipping.

fishhook shanks - stone or bone shanks for attachment of the bone barb in composite fishhooks found on West coast sites.

flaker - usually made of antler or bone, these implements were used to press-off flakes during the manufacturing of stone tools.

flotation - a method of separating small fractions of carbonized materials from excavated soils by floating objects out of the soil and screening the residue off the water surface. All microscopic plant remains and most macroscopic materials are recovered by this method.

gneiss - a coarse grained, banded metamorphic rock consisting of numerous varieties as determined by mode of formation. Often used in sweat baths and cooking after being subjected to intense heat.

gorge - a bone sharpened at both ends that would have had a line attached to the centre. When baited and swallowed by a fish, the gorge becomes lodged in the throat and acted in the same fashion as a fishhook.

gorget - manufactured usually from polished slate tablets these ornaments, found mainly in eastern North America, usually have two drilled holes for suspension on the body. They come in a wide range of forms and generally date to Period IV in Late Great Lakes-St.Lawrence culture.

ground burin - in Palaeo-Eskimo culture, early burins sharpened by a flake-detaching blow were replaced by similar tools during Period IV which were formed and sharpened by grinding hard stones like chert and nephrite. Given the abandonment of the resharpening blow typical of burins around the world, the implements are often referred to a burin-like tools.

Gulf of Georgia complex - these small objects, in a range of forms, carved from soft rock and bone and appropriately called 'whatsit', occur on sites of the southern coast of British Columbia during Period III and early in Period IV. It has been speculated that the objects may be intended to represent insect larvae. Insects at the time of European contact in this area were regarded as having supernatural powers because of their form transformation during the process of metamorphism.

harpoon foreshaft - a harpoon is a composite weapon and the harpoon head often fits into a bone foreshaft from which it detaches upon impact with it's attached retrieval line.

intaglio - used in archaeology to describe figures formed by removing a relatively thin layer of the surrounding soil.

Inuit - called Eskimos by most southerners, the Inuit or Innuit prefer their own name for themselves which means 'the people'.

inuksuk - a pile of rocks stacked on top of one another, a series of which form lines to channel caribou herds into a trap. It is an Inuit word meaning 'like a man'.

juvenile vessel - fired clay products left by children learning the art of manufacturing pottery vessels as well as pipes.

labret - a carved object of stone, bone, ivory, or wood that was inserted though a slit or slits in the mouth. They are found both in the western Arctic and along the West coast. In the latter area, some have associated the objects with people of rank.

leister - a specialized fish spear that usually involves an end consisting of a central spike with two lateral, barbed arms that are flexible so when the fish is struck they grasp it on either side.

lugs - appliqued extensions to act as handles on either stone or pottery vessels.

mandible - the lower jaw of an animal, including humans.

maxilla - the upper jaw of an animal, including humans.

metate - a large grinding stone where plant materials and other products can be reduced to flour with the assistance of a small, hand-held stone tool called a mano. A metate can be either portable or a stationary rock weighing a ton or more.

mortice and tenon - a joining technique used in archaeology to describe a procedure to strengthen the bond between two pottery coils during the manufacturing process whereby an uppermost surface of a coil of a vessel is notched and permitted to partially air-dry before the next coil is added. The pliable clay of the second coil then flows into the notches of the lower coil to form a mortice and tenon type of locking device.

nephrite - an amphibole mineral, which with jadeite, a pyroxene mineral, are collectively know as jade. Being extremely hard and with aesthetic qualities it is frequently manufactured into tools,like axes and burins, and is widely traded.

net gauge - flat, rectanguloid objects of wood or bone used to gauge the size of the openings in a net.

netsinker - these objects are usually natural ovate or circular flat stones that are notched along opposing edges for attachment to the base of a fish net in order to anchor the net to the bottom. Sometimes natural rocks lacking notches are also used.

neutron activation analysis - a sample is made radioactive by irradiating it with thermal neutrons in order to determine with the use of a spectrometer the sample's chemical composition. It is one of the methods applied to silica-rich stones in an attempt to identify their geological source and, particularly in conjunction with petrographic analysis, is used by archaeologists to relate site samples to distant geological deposits and, thus, provide insights into the nature of past exchange networks.

pan pipe - an musical instrument consisting of thin sheets of copper or, more rarely, silver shaped to enclose usually three or four tubes that represented the hollowed wooden flutes. Normally there is no or little trace of the wooden flutes. Pan pipes are characteristic of the Hopewell mortuary complex of eastern North America.

paintstone - any natural pigment that is used to make paint or with which to paint objects. Common paintstones are ochre, limonite, and graphite.

permafrost - permanently frozen soil which, in rare instances, incorporates archaeological materials permitting insights into those elements of technology manufactured from wood and hide that otherwise would have decayed.

petroglyph - a naturalistic or abstract carving on a cliff face, boulder, or artifact. Erroneously referred to as a "petrograph" in the Glossary of Volume I.

phosphate analysis - a method used to measure levels of phosphate in an archaeological site in order to determine the locations of former concentrations of bone that have subsequently been dissolved by acid soils but have left a chemical residue.

pictograph - unlike the petroglyph, pictographs are naturalistic or abstract images painted on to a rock surface. Like petroglyphs, however, they would have served a range of religious and social functions.

platform pipe - usually carved from soapstone, these smoking pipes appear as rare objects in Late Great Lakes-St.Lawrence culture toward the end of Period IV. They are usually encountered in graves. Also called monitor pipes, they derive their name from the pipe bowl occurring in the centre of the carved platform, one end of which served as the stem with drilled hole into the bowl and the other end presumably as the handle to hold the pipe.

post mould - when a post is dug or thrust into the soil and rots away with time the uppermost, darker soil and archaeological refuse will frequently fill or make a mould of where the wooden post had penetrated into the lighter coloured subsoil thus allowing archaeologists to calculate the diameter, depth, and angle of the original post and thereby delineated structures like houses, drying racks, etc. On sites where posts were set into rock rubble the presence of a former post is revealed by the unnatural hollow.

potlatch - the major ceremony along the West coast whereby individual and family lineage rights and privileges were reaffirmed. The ceremony involved gift exchange and sometimes the destruction of wealth.

pottery ware - a regional or temporal pottery assemblage that is characterized by distinctive attributes of form, manufacturing procedure, motifs, methods of applying decoration, and other traits.

prognathism - refers to a physical condition characterized by individuals with projecting jaws.

pseudo scallop shell - an early pottery decorative impression involving a notched stone, bone, or wooden tool which, when impressed into the wet clay of a vessel prior to firing, leaves a distinctive sinuous design. Other forms of impressions were realized with the use of rockering or push-pull motion. This specialized form of dentate stamp derives it's name from the fact that the impression resembles that left by the edge of a scallop shell.

rake tine - a specialized herring rake was used on the West coast consisting of a long device resembling a T-shaped garden rake where the teeth were composed of numerous sharpened bone tines.

rocker stamping - a method of decorating pottery vessels whereby a usually toothed implement was rocked back and forth across the wet clay to produce distinctive impressions.

saputit - stone fish weirs constructed in Arctic rivers in such a fashion as to concentrate fish, particularly char, which could then be speared with a specialized fish spear called a leister. Stone fish traps were also constructed along the West coast where they took advantage of tidal flows.

saw - on the West coast the term ‘saw’ is applied to sandstone implements capable of sawing through bone and other objects while, in contrast, in the east the term generally refers to serrated edged chipped stone implements, also call denticulates, and are believed to have functioned as saws.

scrying - to attain insight into the unknown by magical means, usually with the use of crystals, mirrors, or water in special containers. The word equates with divination.

shaft smoother - usually a sandstone abrader with a longitudinal concave groove where wood spear and arrow shafts were ground to a consistent diameter.

shaman - a person with special powers to influence the spirit world. The shaman could use his or her powers for good purposes, such as healing, or for evil, such as witchcraft.

shuttle - a specialized tool, sometimes manufactured from stone or bone, used to move the weft thread through the vertical warp threads in the process of weaving fabrics.

side blade - a small bifacially chipped stone that was inserted into the slot or slots of a bone or wooden lance or composite arrowhead to increase haemorrhaging upon penetration of the prey.

strike-a-light - a combination of a lump of iron pyrite, a common sulphide mineral, and a chert striking tool. When the pyrite is struck with the chert hammer it produces a spark for making fire.

soapstone lamp - found throughout the Arctic, these receptacles used animal oils as fuel and likely had wicks made of plant material. They provided light, heat, and would have been used in cooking. Lamps were usually manufactured from soapstone but other forms of stone lamps are also known.

spall tool - usually struck from a cobble of hard stone, like quartzite and basalt, these expedient tools occur across Canada and would have served a wide range of cutting and scraping functions.

synchronic - pertaining to cultural or linguistic events that occur simultaneously.

tip fluted point - these distinctive triangular stone points, found throughout much of the Arctic during Period IV and later, had their edges sharpened by the unusual procedure of striking single flakes from one or both edges that extended from the point tip to the basal corners.

uniface knife - a cutting implement that, unlike the more common bifacially flaked knife, has chipping largely restricted to one face although, like the case with the bifacially flaked knives, the flaking produces broad flake scars extending over the face of the tool. This kind of chipping is distinct from that of scrapers where retouch is limited to the immediate edge.

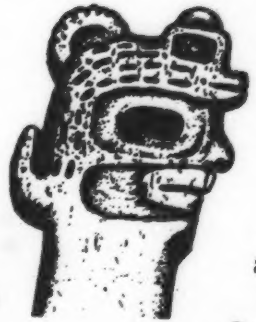
whetstone - a whetstone is distinguished from an abrader by being manufactured from a non-abrasive stone like slate. Abraders were manufactured from abrasive rock like sandstone. It is believed to have functioned as a fine honing tool.

A HISTORY OF THE NATIVE PEOPLE OF CANADA

VOLUME II (1000 B.C. – A.D. 500)

J. V. WRIGHT

This is the second of three volumes on the history of the Native people of Canada as revealed by archaeological evidence. Over 12,000 years of Native history preceded the arrival of Europeans.



Volume II examines developments across Canada such as the gradual replacement of the earlier spear-thrower by the bow and arrow. Pottery was introduced from the south 3,000 years ago; a thousand years later silver was being fashioned into ornaments. Burial-mound ritual spread from the south to eastern Canada, the communal hunting of bison became increasingly important on the Plains, and large pit house villages occupied the salmon rivers of the Canadian Plateau.

In addition, during this period the first evidence of ranked societies composed of slaves, commoners, and nobles appeared on the West Coast, and Palaeo-Eskimo art approached its pinnacle.

It is hoped that these volumes will contribute to a greater appreciation of Native history prior to the devastating events initiated by the European occupation of Canada.

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James V. Wright joined the National Museum of Canada in 1960. Throughout his career, he was influential in the training, encouragement and support of young archaeologists. He also published many books and articles for general and scholarly audiences. In 1991 he retired and was made a Curator Emeritus with the Canadian Museum of Civilization. Dr. Wright received his training at McMaster University, the University of Toronto, and the University of Wisconsin at Madison.

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GLOSSARY

An effort has been made to define potentially unfamiliar words and concepts as they appear in the text but for those instances appearing throughout the Volume placement in the glossary was deemed useful. Most of the following words and phrases pertain to archaeological artifact categories, physical anthropological, and geological words and expressions. As it is suspected, or at least hoped, that readers of Volume II also possess Volume I, items in the glossary of that volume are not repeated here.

antler wedges - also manufactured from bone, wood, and sometimes polished stone, these tools used for splitting wood to produce planks are to be distinguished from the chipped stone wedges which functioned as a form of rudimentary burin.

ascribed status - pertains to an individual's status in a community that is inherited rather than earned as in the case of achieved status.

barbs - small bone implements with one end ground to a sharp point. In most instances, these objects were likely the barb of a composite fishhook.

bark shredder - a specialized tool found on the West coast and used to separate the fibres in bark as an initial stage in the production of cordage and eventually fabrics. Shredders can be manufactured from whale bone or stone and frequently have a large hand-hold cut into their upper edge.

barstone - a rarely encountered ground stone implement, usually associated with the Meadowood mortuary complex of Late Great Lakes-St.Lawrence culture. Related to the boatstone and birdstone but, unlike the preceding, in place of perforations at either end, two projections served to haft the object to a shaft. Barstones were probably ceremonial spearthrower weights.

bast - the inner lining of bark whose fibrous nature makes it ideal for twisting into the cordage used in the production of fabrics and numerous other products.

beamer - an archaeological term for a specialized bone tool that is used to scrape fat and tissue from a hide stretched over a beam.

beaver incisor tools - the incisors of beavers and other large rodents, like porcupine and marmot, were frequently ground in various fashions at their bit edges to produce a range of knives and chisels. Such items were sometime hafted in specialized antler handles.

birdstone - as with the boatstone and the barstone, the birdstone likely functioned as a ceremonial spearthrower weight. In Late Great Lakes-St.Lawrence culture it is generally found in burial situations pertaining to the Meadowood mortuary complex. As with the boatstones, they are also recorded from the Adena mortuary complex. Fashioned from polished slate in the form of a bird, perforations at either end would have permitted hafting to a shaft.

bone beads - common across the entire country, these ornaments were produced by scoring a hollow bone, usually bird bone, snapping it and then grinding and polishing to finish the product.

bone grainer - invariably manufactured from porous bone, grainers are believed to have been used in hide preparation. They are only typical of Plains cultures.

boatstone - manufactured of polished stone, usually banded slate, or even copper, these ceremonial objects are almost invariably recovered from burials. One flat face is deeply hollowed-out with the opposite face having a keel shape and, thus, the name. Two perforations for hafting to a shaft occur towards either end. Boatstones are found in the Adena mortuary complex in Canada and also occur, in a more elaborate form, in the Hopewell mortuary complex south of the border. Boatstones, along with the birdstones, and barstones, likely represent the last expression of the spearthrower weight in eastern North America.

bone spatula - the function or functions of these awl-like objects with a flat ground end is uncertain. They could have been used for a wide range of purposes, such as extracting marrow, applying paint, and even as arrowheads.

caries - localized tooth decay called cavities.

catadromous - refers to fish that live their adult lives in freshwater but return to the sea to breed and grow to the juvenile stage; the reverse of anadromous fish like salmon. The American eel(*Antuilla rostrata*) of eastern North America is an example of a catadromous fish species.

complex - a word used as a classificatory convenience to describe all of the following: a regional or temporal variety of a culture; a poorly understood cultural assemblage; and different mortuary systems. It is definitely a catch-all device with the intended purpose being indicated by the context in which it is used. While such an imprecise word runs contrary to the normal precision expected in science, it does recognize the fact that archaeological data are never complete and, thus, the classifications needed to control the masses of evidence are always, to vary degrees, premature and subject to future modification.

concretion - objects that come in a range of unusual shapes and are produced naturally in solution channels in sedimentary rock. Like fossils, crystals, and other objects of unusual shapes or materials, they were likely treated as a form of amulet as they can often be found in graves.

connubium - an anthropological term to refer to a number of independent groupings of people, such as bands, who intermarry and, thus, establish an extended kinship network.

cord malleated - this refers to a common pottery surface texturing technique realized by paddling the wet surface of a pottery vessel during the manufacturing process with a wooden paddle or hand wrapped in a series of horizontally oriented plant fibre cords.

cord-wrapped stick - a common pottery decorative technique involving a stick or other rigid object with a cord twisted around it which was then impressed into, or dragged across, the wet clay surface of a pottery vessel to form decorative motifs.

dentate stamp - a pottery decorative impression realized by a notched stone, bone, or wooden tool that leaves lineal rows of repetitive square or rectangular impressions. Other methods of application would leave different impressions on pottery vessels.

diachronic - pertaining to cultural or linguistic events as seen through time.

diffusion - a process whereby elements of technology, religious beliefs, and other ideas spread from one culture to another. Direct diffusion pertains a direct transfer, such as the spread of the horse and the gun during the period of European contact. Stimulus diffusion refers to a process whereby the idea for an element of technology, such as pottery manufacture, is transferred from one culture to another but the recipient culture translates it into a form quite different from that of the original donor culture.

ear spools - manufactured of stone, copper, silver, and once probably wood, these ornaments were inserted in a slit in the ear lobe. They were probably indicative of status and are only recorded from Late West Coast culture and Late Great Lakes-St.Lawrence culture in Canada during Period IV. In both areas, ear spools likely diffused originally from Mexico.

ecosystem - an interacting biological community of organisms and their environment.

ecotone - a transitional region between two ecosystems.

end blade - a term largely restricted to Arctic cultures, it refers to any chipped or ground stone point that is believed to have been hafted in the end of a toggling harpoon.

fabric impressed - during pottery vessel manufacture, surface texturing of the vessel was sometimes realized with a cloth, usually represented by a twined fabric. When the vessel is fired the impression is preserved and leaves a reverse impression of the original fabric permitting archaeologists to determine what kind of fabric was used, the number of strands composing the cord, and other detailed information relating to the complex processes of fabric manufacturing.

felsite - a fine grained igneous rock suitable for fashioning into tools by chipping.

fishhook shanks - stone or bone shanks for attachment of the bone barb in composite fishhooks found on West coast sites.

flaker - usually made of antler or bone, these implements were used to press-off flakes during the manufacturing of stone tools.

flotation - a method of separating small fractions of carbonized materials from excavated soils by floating objects out of the soil and screening the residue off the water surface. All microscopic plant remains and most macroscopic materials are recovered by this method.

gneiss - a coarse grained, banded metamorphic rock consisting of numerous varieties as determined by mode of formation. Often used in sweat baths and cooking after being subjected to intense heat.

gorge - a bone sharpened at both ends that would have had a line attached to the centre. When baited and swallowed by a fish, the gorge becomes lodged in the throat and acted in the same fashion as a fishhook.

gorget - manufactured usually from polished slate tablets these ornaments, found mainly in eastern North America, usually have two drilled holes for suspension on the body. They come in a wide range of forms and generally date to Period IV in Late Great Lakes-St.Lawrence culture.

ground burin - in Palaeo-Eskimo culture, early burins sharpened by a flake-detaching blow were replaced by similar tools during Period IV which were formed and sharpened by grinding hard stones like chert and nephrite. Given the abandonment of the resharpening blow typical of burins around the world, the implements are often referred to a burin-like tools.

Gulf of Georgia complex - these small objects, in a range of forms, carved from soft rock and bone and appropriately called 'whatsit', occur on sites of the southern coast of British Columbia during Period III and early in Period IV. It has been speculated that the objects may be intended to represent insect larvae. Insects at the time of European contact in this area were regarded as having supernatural powers because of their form transformation during the process of metamorphism.

harpoon foreshaft - a harpoon is a composite weapon and the harpoon head often fits into a bone foreshaft from which it detaches upon impact with it's attached retrieval line.

intaglio - used in archaeology to describe figures formed by removing a relatively thin layer of the surrounding soil.

Inuit - called Eskimos by most southerners, the Inuit or Innuit prefer their own name for themselves which means 'the people'.

inuksuk - a pile of rocks stacked on top of one another, a series of which form lines to channel caribou herds into a trap. It is an Inuit word meaning 'like a man'.

juvenile vessel - fired clay products left by children learning the art of manufacturing pottery vessels as well as pipes.

labret - a carved object of stone, bone, ivory, or wood that was inserted though a slit or slits in the mouth. They are found both in the western Arctic and along the West coast. In the latter area, some have associated the objects with people of rank.

leister - a specialized fish spear that usually involves an end consisting of a central spike with two lateral, barbed arms that are flexible so when the fish is struck they grasp it on either side.

lugs - appliqued extensions to act as handles on either stone or pottery vessels.

mandible - the lower jaw of an animal, including humans.

maxilla - the upper jaw of an animal, including humans.

metate - a large grinding stone where plant materials and other products can be reduced to flour with the assistance of a small, hand-held stone tool called a mano. A metate can be either portable or a stationary rock weighing a ton or more.

mortice and tenon - a joining technique used in archaeology to describe a procedure to strengthen the bond between two pottery coils during the manufacturing process whereby an uppermost surface of a coil of a vessel is notched and permitted to partially air-dry before the next coil is added. The pliable clay of the second coil then flows into the notches of the lower coil to form a mortice and tenon type of locking device.

nephrite - an amphibole mineral, which with jadeite, a pyroxene mineral, are collectively know as jade. Being extremely hard and with aesthetic qualities it is frequently manufactured into tools,like axes and burins, and is widely traded.

net gauge - flat, rectanguloid objects of wood or bone used to gauge the size of the openings in a net.

netsinker - these objects are usually natural ovate or circular flat stones that are notched along opposing edges for attachment to the base of a fish net in order to anchor the net to the bottom. Sometimes natural rocks lacking notches are also used.

neutron activation analysis - a sample is made radioactive by irradiating it with thermal neutrons in order to determine with the use of a spectrometer the sample's chemical composition. It is one of the methods applied to silica-rich stones in an attempt to identify their geological source and, particularly in conjunction with petrographic analysis, is used by archaeologists to relate site samples to distant geological deposits and, thus, provide insights into the nature of past exchange networks.

pan pipe - an musical instrument consisting of thin sheets of copper or, more rarely, silver shaped to enclose usually three or four tubes that represented the hollowed wooden flutes. Normally there is no or little trace of the wooden flutes. Pan pipes are characteristic of the Hopewell mortuary complex of eastern North America.

paintstone - any natural pigment that is used to make paint or with which to paint objects. Common paintstones are ochre, limonite, and graphite.

permafrost - permanently frozen soil which, in rare instances, incorporates archaeological materials permitting insights into those elements of technology manufactured from wood and hide that otherwise would have decayed.

petroglyph - a naturalistic or abstract carving on a cliff face, boulder, or artifact. Erroneously referred to as a "petrograph" in the Glossary of Volume I.

phosphate analysis - a method used to measure levels of phosphate in an archaeological site in order to determine the locations of former concentrations of bone that have subsequently been dissolved by acid soils but have left a chemical residue.

pictograph - unlike the petroglyph, pictographs are naturalistic or abstract images painted on to a rock surface. Like petroglyphs, however, they would have served a range of religious and social functions.

platform pipe - usually carved from soapstone, these smoking pipes appear as rare objects in Late Great Lakes-St.Lawrence culture toward the end of Period IV. They are usually encountered in graves. Also called monitor pipes, they derive their name from the pipe bowl occurring in the centre of the carved platform, one end of which served as the stem with drilled hole into the bowl and the other end presumably as the handle to hold the pipe.

post mould - when a post is dug or thrust into the soil and rots away with time the uppermost, darker soil and archaeological refuse will frequently fill or make a mould of where the wooden post had penetrated into the lighter coloured subsoil thus allowing archaeologists to calculate the diameter, depth, and angle of the original post and thereby delineated structures like houses, drying racks, etc. On sites where posts were set into rock rubble the presence of a former post is revealed by the unnatural hollow.

potlatch - the major ceremony along the West coast whereby individual and family lineage rights and privileges were reaffirmed. The ceremony involved gift exchange and sometimes the destruction of wealth.

pottery ware - a regional or temporal pottery assemblage that is characterized by distinctive attributes of form, manufacturing procedure, motifs, methods of applying decoration, and other traits.

prognathism - refers to a physical condition characterized by individuals with projecting jaws.

pseudo scallop shell - an early pottery decorative impression involving a notched stone, bone, or wooden tool which, when impressed into the wet clay of a vessel prior to firing, leaves a distinctive sinuous design. Other forms of impressions were realized with the use of rockering or push-pull motion. This specialized form of dentate stamp derives it's name from the fact that the impression resembles that left by the edge of a scallop shell.

rake tine - a specialized herring rake was used on the West coast consisting of a long device resembling a T-shaped garden rake where the teeth were composed of numerous sharpened bone tines.

rocker stamping - a method of decorating pottery vessels whereby a usually toothed implement was rocked back and forth across the wet clay to produce distinctive impressions.

saputit - stone fish weirs constructed in Arctic rivers in such a fashion as to concentrate fish, particularly char, which could then be speared with a specialized fish spear called a leister. Stone fish traps were also constructed along the West coast where they took advantage of tidal flows.

saw - on the West coast the term 'saw' is applied to sandstone implements capable of sawing through bone and other objects while, in contrast, in the east the term generally refers to serrated edged chipped stone implements, also call denticulates, and are believed to have functioned as saws.

scrying - to attain insight into the unknown by magical means, usually with the use of crystals, mirrors, or water in special containers. The word equates with divination.

shaft smoother - usually a sandstone abrader with a longitudinal concave groove where wood spear and arrow shafts were ground to a consistent diameter.

shaman - a person with special powers to influence the spirit world. The shaman could use his or her powers for good purposes, such as healing, or for evil, such as witchcraft.

shuttle - a specialized tool, sometimes manufactured from stone or bone, used to move the weft thread through the vertical warp threads in the process of weaving fabrics.

side blade - a small bifacially chipped stone that was inserted into the slot or slots of a bone or wooden lance or composite arrowhead to increase haemorrhaging upon penetration of the prey.

strike-a-light - a combination of a lump of iron pyrite, a common sulphide mineral, and a chert striking tool. When the pyrite is struck with the chert hammer it produces a spark for making fire.

soapstone lamp - found throughout the Arctic, these receptacles used animal oils as fuel and likely had wicks made of plant material. They provided light, heat, and would have been used in cooking. Lamps were usually manufactured from soapstone but other forms of stone lamps are also known.

spall tool - usually struck from a cobble of hard stone, like quartzite and basalt, these expedient tools occur across Canada and would have served a wide range of cutting and scraping functions.

synchronic - pertaining to cultural or linguistic events that occur simultaneously.

tip fluted point - these distinctive triangular stone points, found throughout much of the Arctic during Period IV and later, had their edges sharpened by the unusual procedure of striking single flakes from one or both edges that extended from the point tip to the basal corners.

uniface knife - a cutting implement that, unlike the more common bifacially flaked knife, has chipping largely restricted to one face although, like the case with the bifacially flaked knives, the flaking produces broad flake scars extending over the face of the tool. This kind of chipping is distinct from that of scrapers where retouch is limited to the immediate edge.

whetstone - a whetstone is distinguished from an abrader by being manufactured from a non-abrasive stone like slate. Abraders were manufactured from abrasive rock like sandstone. It is believed to have functioned as a fine honing tool.

A HISTORY
OF THE NATIVE PEOPLE OF CANADA

VOLUME II (1000 B.C. – A.D. 500)

J. V. WRIGHT

This is the second of three volumes on the history of the Native people of Canada as revealed by archaeological evidence. Over 12,000 years of Native history preceded the arrival of Europeans.

Volume II examines developments across Canada such as the gradual replacement of the earlier spear-thrower by the bow and arrow. Pottery was introduced from the south 3,000 years ago; a thousand years later silver was being fashioned into ornaments. Burial-mound ritual spread from the south to eastern Canada, the communal hunting of bison became increasingly important on the Plains, and large pit house villages occupied the salmon rivers of the Canadian Plateau.

In addition, during this period the first evidence of ranked societies composed of slaves, commoners, and nobles appeared on the West Coast, and Palaeo-Eskimo art approached its pinnacle.

It is hoped that these volumes will contribute to a greater appreciation of Native history prior to the devastating events initiated by the European occupation of Canada.

ABOUT THE AUTHOR

James V. Wright joined the National Museum of Canada in 1960. Throughout his career, he was influential in the training, encouragement and support of young archaeologists. He also published many books and articles for general and scholarly audiences. In 1991 he retired and was made a Curator Emeritus with the Canadian Museum of Civilization. Dr. Wright received his training at McMaster University, the University of Toronto, and the University of Wisconsin at Madison.

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